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# Psychological Review

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HERBERT S. LANGFELD
PRINCETON UNIVERSITY

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THE PSYCHOLOGICAL REVIEW

# THE PSYCHOLOGY OF 'ATTITUDES' *

## PART I

BY MUZAFER SHERIF AND HADLEY CANTRIL **

*Princeton University*

### INTRODUCTION

During the past two decades the problem of attitudes has become central in social psychology. Thus, G. W. Allport writes, "The concept of attitudes is probably the most distinctive and indispensable concept in contemporary American psychology. No other term appears more frequently in experimental and theoretical literature" (2, p. 798). Murphy, Murphy and Newcomb, in their monumental volume summarizing the state of social psychology in 1937, again emphasize the point: "Perhaps no single concept within the whole realm of social psychology occupies a more nearly central position than that of attitudes" (97, p. 889). We need not multiply these representative statements from other sources to demonstrate the important position the concept of attitudes holds in contemporary social psychology.

It is significant that sociologists feel as much at home in the study of attitudes as do psychologists, so that the study of attitudes is by no means simply the concern of psychologists alone. Some sociologists have gone so far as to equate social psychology with the study of attitudes (14, 51, 123). In the first decade of this century, attitudes also became a focal problem in experimental psychology. After the failure of the introspective analysis of the higher mental processes at Würzburg, descriptions were given in 'attitudinal' terms such as *'Einstellung'* and *'Bewusstseinslage'* (105, 134). With this prominent start in experimental psychology, attitudes came to stay as an important concept in that field.

In this paper we are proceeding with the conviction that experimental and social studies on attitudes have much to contribute to one another in bringing about a unified psychology of attitudes. The psychologist's task is to give an adequate account of the psychological mechanisms involved in the formation of an attitude in any individual. The formation of a *social* attitude in the individual should be essentially the same as the formation of any attitude if the explanation of this formation is to be psychology at all. We are here groping in this direction. As

* We have put the word *attitude* in quotation marks since 'attitude,' in spite of its wide use in psychology, is essentially a term of everyday speech, not primarily a concept of systematic psychology. In this discussion we are indicating what seems to us the proper meaning of the term for psychology and how this meaning is derived from established psychological principles.

** Dr. Sherif, on leave from the University of Ankara, is at Princeton on a State Department fellowship.

we shall see, attitude studies at present do not give us a unified picture. In fact the problem of attitudes is in a very confused state. Perhaps the confusion has increased in proportion to the wealth of literature: different investigators have had different interests and points of view in approaching the problem.

## ATTITUDES IN SOCIAL LIFE

When we look at any society, whether primitive or highly developed, whether simple or complicated, we observe conformities of behavior, *within the limits of variations due to individual differences,* on the part of the individual members of any society as they carry on the daily business of living—for example in regulating instinctive activity, dress, likes or dislikes of other groups, or responses to events which have social significance. When the established conformity of any particular individual member is taken for investigation in any of these matters, that is to say, when analysis and explanation are carried to the psychological level, the problem becomes primarily one of the psychology of attitudes.[1]

We have used the term 'established conformity' very deliberately. For these established conformities result from conformity to social standards or norms which have come into existence in a deterministic way as a consequence of the interaction of individuals in the all important business of living. Individual members within a society come to acquire these established conformities of experience and behavior within the limits of their individual differences.[2] We may, in fact, say in a summary way that the socialization which occurs when an individual becomes a member of a group consists mainly in the achievement of conformity in experience and behavior to social values, standards, or norms already established. And the process of achieving conformity is, if we analyze it closely, nothing more nor less than the formation of appropriate attitudes in relation to these socially standardized values or norms or other criteria of conduct.

## ATTITUDE STUDIES AT PRESENT WITH METHODOLOGICAL CONSIDERATIONS

The approach to the psychology of attitude has been many-sided. The early work of the Würzburg laboratory gave the historical setting to more recent work on *Aufgabe.* In 1918 Thomas and Znaniecki stimulated other sociologists to analyze the concept of attitude further as a useful tool in the explanation of the phenomena with which they dealt. The work of cultural anthropologists such as Boas, Malinowski and Sapir, and of many contemporary ethnologists, highlights the variation in cultural norms and the consequent differences in the attitude of individuals living under different social systems.

Psychologists beginning with Thurstone and continuing with Likert, Droba and others worked out procedures for measuring attitudes. In recent years the attitudes of all kinds of people toward almost all conceivable subjects have been measured. Other investigators such as G. W. and F. H. Allport, Katz, Bain, Faris and Lasker, concerned themselves with the genesis and

[1] The question of whether or not the whole of social psychology consists of a psychology of attitudes is not our problem here. We may only say in passing that it is our opinion that social psychology does *not* consist only of the psychology of attitudes.

[2] Without in any way denying the enormous temperamental differences between individuals, a systematic awareness of the fact that temperamental differences always function within a given social context and set of norms would undercut and bring into proper perspective typologies such as those advanced by Jung, Spranger, and Sheldon which attempt to explain social behavior by categorizing personality (71, 112, 117).

nature of attitudes. More recently, the interest in measuring attitudes has given way to the measurement of public opinion by the use of stratified samples of different populations. While the techniques for measuring attitudes and opinion can be usefully employed to gather valuable information on attitude determinants and properties, and while the data obtained from such measurement often have a high practical, strategic, or systematic value, the great bulk of quantitative research has been designed for the primary purpose of measurement alone, not systematic understanding.

After an exhaustive review of the literature on the psychology of attitudes, Nelson reports his impression, shared by others, "of the wide variety of meanings which are ascribed to this term" (100). He cites 23 rather distinct characterizations given the term 'attitude' by psychologists or social scientists up to 1939, ranging from 'organic drives,' 'neural sets,' or 'trial responses,' to 'ways of conceiving objects,' or sum totals of 'inclinations, feelings, notions, ideas, fears, prejudices, threats, and convictions about any specific topic.' In a recent paper concerned with the definition and use of 'attitude' in social psychology, Strauss points out that "the concept, despite its key position, is marked by considerable confusion" (122, p. 329). He notes that much of the research on attitudes has little or nothing to do with attitude theory and that the use of attitude as a 'common sense explanation' rather than as a 'genuine causal explanation' (p. 334) has retarded systematic understanding. It is therefore not surprising that some strict experimentalists—dissatisfied with what they may regard as the 'practical' or unsystematic nature of attitude research in social psychology—look down on it and on social psychology in general as having little to do with pure science. They may take it as an example of why the pure scientist must follow Titchener's dictum and stand "apart from the great majority of his fellow men," disavow interpretation as something entirely 'foreign to him' and move "in the domain of bare existence" (124, pp. 69 f.).

*The laboratory and everyday life.*—Before proceeding with a discussion of the psychology of attitudes, it is necessary to clear up the relationship between pure experimental research and the systematic study of attitudes in everyday life situations. A psychological construct—if it is to prove valid and adequate—must be as valid and adequate in handling the stuff of ordinary human affairs as in handling the controlled variables of the laboratory experiment. Various writers have fallen into the error of making a distinction for one reason or another between 'psychology' and 'social psychology.' Klineberg, for example, makes such a distinction "for purposes of convenience" (78, p. 4), and puts his emphasis on a demonstration of "the wealth of social patterning" rather than on the "constants of human behavior" (p. 8).

Science consists of a set of conceptual constructs which have high predictive value. If a psychologist is to make any claims that will have scientific validity, he must obviously be as objective as possible. This does not mean, however, as Titchener felt, that a psychologist must be 'disinterested and impersonal.' The highbrow superciliousness of those who hold that a true 'scientific' psychologist should not and cannot deal with the concrete realities of men in their social life comes from their confusion of the fact that scientific objectivity derives from its methods and not from the aloofness of its observers (26). William James long ago pointed out that psychology is scientific to the extent that it uses methods which make veri-

fication possible, irrespective of the theories, biases, or prejudices of the experimenter. "The most useful investigator, because the most sensitive observer," said James, "is always he whose eager interest in one side of the question is balanced by an equally keen nervousness lest he become deceived" (70).

Since the scientist's objectivity derives from his methods rather than from his own interests or from the type of material with which he deals, and since the psychologist's goal is to understand the thought and behavior of men in real life situations, the scientific psychologist becomes obligated, rather than forbidden, to formulate concepts that will stand up both in the laboratory and in everyday life (21). His task is, of course, particularly difficult since the determinants of thought and action in real life are so complicated, the context within which they function so varied and changing. Nevertheless, the search for adequate constructs must proceed if psychology is to become anything but the nasty little discipline James once dubbed it.

If the psychologist becomes fearful of the consequences of crossing a borderline which he feels separates his scientific laboratory research from its application to real life problems, he should remember that the concepts of chemistry, physics, and biology have been developed by frequent crossing back and forth. Theoretical concepts arrived at in the laboratory have been tested for their adequacy in normal, non-laboratory contexts. In the history of the physical sciences, real life situations have forced modifications and revision, stimulated further research which has produced more adequate constructs. Julian Huxley, for example, has pointed out the interdependence of application and theory in contributing to the advances of the physical sciences (68). Giving examples of research on high voltage tensions and its use in the transmission of electricity, he notes that "sometimes it is not very clear what is pure and what is applied, or in which direction the current is flowing."

Fortunately for psychology, most of those now working in the field are becoming increasingly aware of the challenge which the explanation of everyday life situations poses to their scientific interest. We mention the problem here because it is essential to our argument that any final conceptualization of the nature of attitudes must make quite explicit the mutual dependence of data obtained from the laboratory and data obtained from real life situations. In other words, the nature of attitudes is not two problems—one for the laboratory and one for everyday life—but one single problem.

The concepts or variables thus formulated will eventually make it possible to construct a psychology of attitudes which can be used to study any kind of attitude, social or non-social, in this or any other social system. For in spite of cultural diversities, psychological laws ought to be the same for individuals in any social system. Otherwise, logically speaking, we should be arguing—even if we do not mean it—some sort of 'cultural racism,' similar to biological racism. If psychological laws are not the same for all individuals, then the German *Kultur* apologists were right in arguing that the members of their unique *Kultur* could be understood—not explained—only by the peculiar logic of their *Kultur*.[8]

[8] In the field of *anthropology* an adequate synthesis of the psychology of attitude should be a guide to more adequate generalizations on the anthropologist's own level. Anthropological concepts which try to fit cultures into types or which imply the uniqueness of cultures are for a psychologist quite incomprehensible. From our point of view, the facts and relationships of different economic and social organizations studied by the anthropol-

*Evaluation of norms.* We must make one more prefatory remark before discussing psychological concepts themselves: our position concerning the evaluation of standards, social values, or norms, since this position has important ideological implications. We repeat that standards, social values, and norms are the product of human interaction in the process of living. There is no finality about them. They are not absolute. In spite of their inertia after they once come into existence, and in spite of the efforts of those who for one reason or another are vitally interested in preserving the established order, we observe in the course of history that social standards, values or norms do change as a consequence of new modes of human interaction which are brought about by changes in technological and economic conditions (22, 23).

Any given individual is confronted with the social standards, values, or norms of his environment. In short, social norms are first external to the individual or on the stimulus side with respect to him. As such, social standards, values, or norms are first of all the data of the social sciences, not of psychology. Strictly speaking, then, the task of the psychologist is the study of the formation of attitudes as a consequence of contact with these social norms through other individuals or groups or through various products of the social and economic environment. In spite of the diversity and variations of social standards, values, or norms in different societies, human beings do by and large form attitudes in conformity to their group.

The psychologist and the social scientist, however, cannot complacently stop at this point. They can go further and show the consequences of the experience and behavior which are regulated by attitudes developed and prescribed by existing social norms. On the basis of such studies, they can reach conclusions as to whether or not the attitudes formed are conducive to a harmonious and well-adjusted personality or to a contradictory and unadjusted personality, whether or not the attitudes formed bring about social solidarity or friction. In short, the psychologist and the social scientist can reach conclusions concerning the extent to which attitudes formed from prescribed social norms conform to or are contradictory to the objective conditions existing at any given period in a given social system.

*Our present task.* We have seen that in spite of the wealth of material in the field of attitudes, we still do not have a unified and established psychology of attitudes. The variety of phenomena covered by the concept 'attitude' vary to a large degree in their specificity and range. On the one hand we have strict experimental laboratory investigators who are interested in the attitude or set to a very limited and precise stimulus situation in a laboratory set-up; on the other hand we find social psychologists and social scientists working on attitudes of individuals or groups to a whole nation or race, or to values and concepts which have wide extensions such as the concepts of fascism and democracy. It is no wonder, therefore, that investigators working on one level of generality often use concepts which have very little meaning or relevance for investigators working on a different level of generality.

It is our methodological conviction that attitudes in strict laboratory situations and attitudes in the most complicated social situation have, essentially, the same psychological mechanism at bottom, that the basic psychological

ogist are social norms and values which act as social stimuli and, as such, have characteristics important for the anthropologist and the social psychologist to study.

substrata functioning in both instances are the same in nature. This is, of course, not in the least a denial of the rich and complicated motivational, affective, and cognitive factors which take part in social or inter-personal attitudes. But in order to develop concepts which have scientific generality of the kind found in the natural sciences, we must give up the purely descriptive concepts used by social psychologists and sociologists and see what functional variables have been well established and verified in experimental psychology and other controlled investigation. Once equipped with these well established variables or concepts, we can then proceed to see if we can extend these to the more complicated cases of attitudes which lead the individual to react in characteristic ways in actual social interaction.

Our specific task then becomes self-evident. We shall proceed to find the most essential criteria which can be detected in any attitude—from the relatively simple case of the laboratory set-up to the more complicated situations in actual social life. We shall proceed with a minimum of assumptions and our analysis may seem to be extremely simple and self-evident.

## A CHARACTERIZATION OF ATTITUDES

Attitudes are among those components of the psychological make-up of the individual which determine that he shall react not in a passive or neutral way, but in a selective and characteristic way especially in relation to certain specific stimulus situations. Attitudes are not, of course, the only psychological components or states that determine that an individual will react to the environment in a selective or characteristic way. When the individual is hungry, thirsty, or sexually aroused or in some other emotional state, or has been recently stimulated by a functional change in the receptor organ or in the organism at large, he reacts in selective or characteristic ways to the environment. Attitudes, then, are *among* the various psychological factors which determine the individual's selective reaction to his environment. In our opinion, Woodworth has rendered psychology a great service by accentuating the fact of the selective reaction of the organism at the very beginning of the fourth edition of his general *Psychology*.

In all the representative definitions or characterizations of attitudes, one feature is common to them all: that an attitude, whatever else it may be, denotes a functional state of readiness which determines the organism to react in a characteristic way to certain stimuli or stimulus situations. A glance at some representative definitions of attitudes, imposes on us the fact that their essential feature is a *functional state of readiness*.

"The 'attitude' is primarily a way of being 'set' toward or against certain things" (Murphy and Murphy, 96).

"[Attitude] is readiness for attention, or action, of a definite sort" (Baldwin, 6).

"Attitude—the specific mental disposition toward an incoming (or arising) experience, whereby that experience is modified, or, a condition of readiness for a certain type of activity; . . ." (*Dictionary of Psychology*, Warren, 132).

"An attitude is a more or less permanently enduring state of readiness of mental organization which predisposes an individual to react in a characteristic way to any object or situation with which it is related" (Cantril, 20).

After reviewing these and other representative characterizations of attitudes, G. W. Allport reaches the conclu-

sion that "the essential feature of attitude is a preparation or *readiness* for response." Allport gives his own definition in which this functional state of readiness is essential.

"An attitude is a mental and neural state of readiness, organized through experience, exerting a directive and dynamic influence upon the individual's response to all objects and situations with which it is related" (2).

## CRITERIA OF ATTITUDES

Whatever other features attitudes may have (and the features of attitudes do vary according to the degree of complexity), it is certain that all attitudes have a state of readiness in common. However, every state of readiness of the organism is not an attitude. There are numerous states of readiness which cannot be called attitudes. For example, a child of two or three is hardly ever neutral or passive to his environment. He is apt to be extremely partial one way or another to the things or persons surrounding him. He is constantly after all sorts of satisfaction. All these momentary tendencies imply states of readiness. But in spite of all this, we can hardly say that a child of three is full of attitudes. In fact he has very few (if any) established or stable attitudes. He may have developed some attitudes toward certain persons like his mother or certain objects such as types of food. But a child at this age will even react in a very negative way to his mother if she proves to be an obstacle in his effort to gain some satisfaction at the moment. We need not elaborate here other cases of readiness which cannot properly be labelled as attitudes.

We must conclude therefore that cases of readiness are not exhausted by all cases of attitudes. The state of readiness of the organism is a more general term. Attitudes constitute specific cases of readiness. Therefore, we must have some concrete criteria which single out cases of readiness as attitudes. It seems to us that the following five criteria are found in cases of readiness which are labelled as attitudes.

1. *Attitudes always imply a subject-object relationship.*—Attitudes are always related to definite stimuli or stimulus situations. These may be *objects* such as home, automobile, souvenir, some particular eating place; *persons* such as one's own body, mother, father, brother, some friend, rival, teacher, sweetheart, wife; or *groups* of people such as classmates, playmates, Negroes, the community; *institutions* such as the school, college, church, club; or socially established and standardized *concepts, values,* or *norms* such as the flag, the Constitution, democracy. These subject-object relationships are not innate, are not biologically given. The items or objects toward which the subject-object relationship is developed are always first on the stimulus side for the individual. Only after contact with these outside stimuli, does any relationship develop between them and the individual.

In various definitions of attitude, the *content of an attitude* is often mentioned in such terms as 'objects,' 'social stimuli,' 'social objects,' etc. (*cf.* 100). But the content of attitudes will depend upon the particular nature of the subject-object relationship established. The contents of attitudes are as numerous and as different as the stimulus situations to which attitudes are related.

2. This means that *attitudes are formed* and formed in relation to objects, persons, and values which may or may not have motivational appeal at first. Almost any food may satisfy hunger, but we may develop a special liking for a special food, even for a special restaurant, and even a special table in that restaurant. When these

particular likes or dislikes are more or less fixated, we have formed attitudes in relation to these particular objects. Almost any average member of the opposite sex will satisfy sexual need, but when it is fixated, with all its affective overtones, it becomes an attitude—an attitude toward a particular person. George Bernard Shaw has aptly defined a lover as a man who exaggerates the difference between one woman and another.

Since attitudes are not innate states of readiness, since they are formed in relation to particular objects, persons, institutions, and values or norms, the individual has first to come into contact with them. And coming into contact is a perceptual situation. This means that the primary stage in the formation of attitudes is a perceptual stage. The presence of a perceptual stage is of the utmost psychological importance. For certain basic facts about perceptual situations provide the starting point for the formation of attitudes, as we shall see in the next section.

The perceptual stage in the formation of attitudes is especially important in cases of attitudes which do not have a motivational basis.[4] As the accumulating investigations in the field of attitudes show, many social attitudes are formed through verbal judgments of adults. Indeed the most directive and important social attitudes which determine status, social distance, and the like seem to be formed through verbalized short-cut dictums or value judgments and through situations which outwardly do not have any *momentary* motivational appearance.

The fact that attitudes are not innate but are formed as a result of the individual's contact with his environment means, of course, that attitudes are learned or conditioned. Just what the psychological or physiological mechanisms of this learning may be are irrelevant to the present discussion. We are concerned here with demonstrable psychological properties and characteristics of attitudes. Obviously, the more adequate the psychology of learning or conditioning becomes, the better will we understand the processes involved in attitude formation. But it is almost inconceivable that any final adequate account of learning developed in the future would ever negate the statement that attitudes are formed.

3. *Attitudes have affective properties of varying degrees.*—Established attitudes are charged with affective or value properties in varying degrees. The affective property of attitudes may be due to motivational (instinctual) origins such as hunger and sex (as exemplified in cases of attitudes toward a certain food, a certain restaurant, a sweetheart or wife) or may be due to non-motivational sources (non-instinctual).

The affective property of attitudes with motivational origins is self-explanatory. The affective property of attitudes with non-motivational sources is due to the fact that these attitudes are formed in relation to social values or norms which in themselves are standardized affective fixations. They are usually verbalized, short-cut value judgments such as "the home is a sacred institution." Value judgments are always given in adjectival form. And all judgments given in terms of adjectives certainly have affective properties. The social values presented in short-cut dictums, or in other ways accompanied by praise or blame, naturally are affectively charged. The individual is forced to respect and uphold the values of the family, school, church, or other institu-

[4] We are using the term 'motivation' here to denote only drives, needs, or instincts, which have a definite origin in the organism of the individual.

tions he is a member or would-be member of. If he does not respect and glory in his flag, he is compelled to. The very fact of membership and participation in group activity or ceremony makes certain standardized values or practices sacred, justifiable, right, honorable, or dutiful in the individual's eyes. Consequently, the attitudes an individual forms in relation to such activities or practices become affectively charged.

Another important reason why attitudes are affectively charged is the fact that many attitudes prescribe the individual's relationship, status, or rôle with respect to other individuals or groups (such as teacher, worker, boss, minister, assistant, etc.). And experiences connected with status are affectively charged.[5]

4. *Attitudes are more or less enduring states of readiness.*—There are states of readiness which are more or less momentary, depending on the state of the organism and the situation at the time. For example, we may be very hungry and snatch a loaf of bread. After eating enough and becoming satisfied the loaf may then be pushed aside. At the time of sexual tension, a person toward whom there is no established attitude but who can satisfy the sexual need may be passionately seized, but after the need is satisfied so the tension is resolved, one may never look at the person again. In these cases the state of readiness dissolves as the satiation point is reached, at least for the time being. But not so with attitudes. They are more or less enduring states of readiness. Thus a wounded soldier tries to show his respect to his superior officer who has really shared the hardships with him. A very much preferred food may be the subject of praise after the point of satiation has been reached. A sweetheart still has the sentimental halo in the eyes of her lover even after sexual satisfaction. A dear friend is still liked even during moments of minor friction. Some people in India actually starve to death rather than eat meat which is 'forbidden' by the very rigid norms established and accepted by Hindus. These examples are sufficient to illustrate the fact that attitudes, once formed, are more or less enduring states of readiness, quite independent, within limits, of the momentary states of the organism.

An attitude becomes a more or less enduring state of readiness because of the cognitive components in its formation. We saw above that attitudes are not innate entities, that they are formed as a consequence of contact with objects, persons, or situations to which they are related. We referred to these contacts as the perceptual stage in the formation of an attitude. It is this perceptual stage which begins to give an attitude its cognitive component in the process of formation. Since the first stage in the formation of an attitude is a perceptual stage, we can begin at once to utilize the concepts developed to account for perceptual situations. Here we are on relatively safe ground. The fact that attitudes are more or less enduring indicates, further, that attitudes are learned. And the more adequate the account of learning becomes, the better will we be able to understand the basis for an attitude's enduring quality,

[5] Without making a special issue of it at this point, we may note in passing that attitudes related to rôle or status are ego-involved. And ego-involved experiences and responses have affective properties. The ego-structure is not innate, not instinctive, but a genetic formation the main constituents of which are established attitudes, starting with the delimitation of the physical body with appropriate attitudes formed around it and with the learning of personal names, various adjectives and other fixations. The problem of ego-structure and its bearing on the psychology of motivation is much too important and complicated to be treated briefly in the present discussion.

just as we will better understand the basis of its formation. And it is also almost inconceivable that any final explanation of learning would alter the statement that attitudes are more or less enduring.

We should be very clear on one point, however, so as to avoid misunderstanding. We have said that attitudes are more or less enduring states of readiness to stimuli, objects, persons, groups, values or norms, in relation to which they are formed and which determine the individual to react in a characteristic way in relation to them. But attitudes are not absolute, fixed states of readiness. Since they are formed as a consequence of contact with objects, values or norms to which they are related, they may change, disintegrate. For example, good friends may become deadly enemies, a religious person may become an atheist, a conservative may become radical as a result of contact with new facts and events.

5. *Attitudes range in the number and variety of stimuli to which they are referred.*—Since attitudes develop as a consequence of experience and since attitudes involve a cognitive component, the extent or range of stimuli to which an individual will relate an attitude will vary according to the nature of the source of the attitude and according to the relationship the individual makes between an attitude and the stimulus situations he confronts. Although certain attitudes—especially some of those created in laboratory situations or those of children—may only be evoked by the situation under which they originally developed, the more usual process is that an attitude, once established, will be related by the individual to a variety of objects or situations that have not necessarily been active in its original establishment.

The wide range exhibited by some attitudes is possible because of the fact that the stimulus situation toward which the attitude has developed is itself extensive, that is to say, possible of representation or expression in many different specific contexts. When we noted as our first characteristic of attitude that it always implied a subject-object relationship, we pointed out that we could label institutions, concepts, social values, or norms as 'objects' in this sense. Social attitudes toward such stimulus situations are, we have said, often derived from the verbal judgments of others. For example, once an individual has accepted the value-judgment of his group that 'Negroes are inferior' and should occupy a lower status in society, he can and does easily relate his acquired attitude to innumerable specific situations. As we shall see, a considerable body of research in the past two decades has shown that attitudes have a directive effect in specific situations, that a very general attitude will reveal itself in a wide variety of ways.[6]

## CLASSIFICATION OF ATTITUDES

This approach to the problem of attitudes renders meaningless various attempts to classify them. G. W. Allport has summarized the major varieties of classification: positive and negative, specific and general, public and private, common and individual attitudes (2). Since the characteristics of any attitudes in any individual will vary according to the situation or circum-

[6] In this connection, the experimental work on meaning and association time is significant, in view of the fact that the upshot of the controversy was that meaning is more immediate than specific association. (See the experiments of Moore, Tolman, Weld, and Cantril.) This being the case, the immediate 'meaning' reaction determines the range rather than specific associations. This is illustrated later in this paper in the references, for example, to Kay's study of personal and general frames (76) and Horowitz's study on the development of race attitudes (66).

stances under which the attitude has developed and the function the attitude serves for the individual, any classification of attitudes becomes almost as nebulous as any classification of stimulus situations (including objects, persons, groups, values and norms) or of personal and societal relationships. Simple, dichotomous classifications especially distort and falsify the problem. Take, for example, the distinction made by Thomas and Znaniecki, between 'common' and 'individual' attitudes. Their use of the word 'common' refers to attitudes 'common to all conscious beings,' their use of 'individual' refers to attitudes 'peculiar to only one individual member of the group' (123, p. 18). Such a distinction makes no place for the attitudes of members of small or large groups, or the attitudes characteristic of a given social system, not to mention the elaborate and tenuous classification that would be necessary to place an attitude according to the subtle variations it might have for the individual with reference to the attitudes of other members of the same group or social system.

### THE PSYCHOLOGY OF VALUE INCLUDED IN THE PSYCHOLOGY OF ATTITUDES

We have said above that attitudes always imply a subject-object relationship and that attitudes are affectively charged. Hence the stimulus or object or group to which an attitude is related is reacted to affectively. In other words, the stimulus, object, person, group or norm in relation to which an attitude is formed has value—either positive or negative and in different degrees for that individual. We are using the word 'value' to denote these affective qualities. Therefore, the problem of value as an affective quality is part of the psychology of attitude.

We do not mean to say that all attitudes are social attitudes, or that all attitudes are related to social values. An attitude may be developed toward certain woods in which a person has taken solitary walks or an attitude may be formed in relation to almost anything peculiar to the surroundings and experiences of the individual. And we might mention in passing the abnormal fixations sometimes made by individuals on queer and unusual objects.

In spite of this fact, however, the attitudes most important in daily life are social attitudes—attitudes formed in relation to other individuals, groups, institutions, tools and technology, standardized values or norms. These are the attitudes that really determine an individual's reaction to other people, other groups and that map out for him the main boundaries of his experience and taste. Most of these social attitudes are transmitted by short-cut verbal value-judgments. Words are the most common medium for both the formation and the expression of social attitudes. And it is probably because of this fact that some psychologists have characterized attitudes as *verbalized* dispositions. Although we know the social attitudes of others largely from the words they use, most of us do have many quite personal attitudes, not related to social values, which we may seldom, if ever, express—attitudes toward some loved one, someone we strongly dislike, some personal keepsake, some house. To be sure, if we are probed concerning these things, we will be able to express our attitude. But many attitudes we may have which we may never verbalize are just as much 'attitudes' as those we do verbalize spontaneously. The point is that all attitudes—whether social or non-social, whether verbalized or non-verbalized—function essentially according to the same psychological principles, even though there may be differences of content, richness, compellingness, or endurance.

Although the psychology of values is involved in the psychology of attitudes, it should be borne in mind that social values, being first on the stimulus side in relation to the individual, are essentially the data of the social sciences. Social psychologists become interested and concerned with social values simply because social values are part, and an important part, of the stimuli that surround man and, through stimulation, influence him.

### SPECIAL CASES OF ATTITUDES

Various terms such as 'set,' 'stereotype,' 'prejudice,' and 'opinion' may all be regarded as attitudes with particular characteristics which have been given certain labels by common use. The psychological states described by all of these terms are developed in relation to certain stimuli in the identical way that attitudes are developed. All are affectively charged in relation to the stimuli. All are more or less lasting, all are acquired states of readiness determining the individual's characteristic reactions to the stimuli to which they are related. There are, of course, differences in the range of stimuli to which each of these forms of attitudes can be related, and there are differences in the intensity with which these different types of attitudes are displayed. There are also differences due to the conformity of these attitudes to objective conditions, as, for example, the difference between the attitude of a biologist to the facts of biological evolution and the attitude of an uneducated Baptist to the same facts. We repeat, however, that all of these forms of attitudes follow essentially the same pattern in their development.

As commonly used the term 'set' is applied to a relatively restricted, temporary attitude, or to momentary states of readiness; the word 'stereotype' is applied to an intense and rigid attitude, while the word 'prejudice' applies to an attitude still more rigid and intense and one generally based on false information. The term 'opinion' is generally used to describe an attitude that is or has been expressed and that is based more on objective conditions than a 'stereotype' or 'prejudice.'

We are mentioning the fact that these terms are special cases of attitudes for a methodological reason. For some investigators use one particular term and deal with the problems surrounding it as if they were separate problems unrelated to the characteristics of attitude or the conditions which develop attitudes. We strongly believe that we shall gain much if we unify the concepts which can be really unified and if we do not use different concepts for the same problem. Following the rule of scientific parsimony, we shall try to restrict ourselves to as few concepts as necessary.

### FACTS FROM THE EXPERIMENTAL LABORATORY

Attitudes are inferred from the reactions (verbal or non-verbal) of man. When an individual reacts *repeatedly* in a characteristic way (positive or negative) in relation to a certain stimulus object, we infer that he has an established attitude toward that stimulus. When a group of individuals react *repeatedly* in a characteristic way to a stimulus situation, we infer that the members of the group have an established social attitude in relation to it. This characteristic reaction of groups of people is sometimes called 'conforming behavior.' These conformities are discriminatory or selective, as all attitudes are. This means that all attitudinal reactions are *judgmental* activities. It is, therefore, not a mere coincidence that social value-judgments reveal themselves in the psychology of the individual as established attitudes.

Whether these discriminative activities revealing attitudes are verbally expressed as short-cut judgments of opinion or value, as in logic, or are expressed only in behavior, does not matter a bit psychologically.

As we have seen before, attitudes always imply a subject-object (stimulus-organism) relationship. Attitudes always are related to some object, person, group or standardized norm. This relationship is not innate, it is formed. In order to be formed, the individual first has to come into contact with the object (person, institution, norm). This is a perceptual situation. Therefore, the first stage in the actual formation of an attitude is a perceptual stage, with the internal factors of the organism and external (objective) factors of the stimulus situation coming into play.

The term 'attitude' (used in everyday language to denote an established state of readiness) does not express any specific psychological mechanism. It is a composite term, especially useful to denote in an empirical way an important common ground between psychologists and sociologists. When characterized psychologically and traced from the point of view of its formation, it becomes evident that the psychology of attitudes is intimately related to the psychology of perception and judgment. This is true, *no matter what the motivational basis or diversity of content of an attitude may be.* In the present approach towards the psychology of attitudes, we shall put our emphasis on perceptual and judgmental processes and see how far it can carry us. Here we do not need to take sides in favor of any learning theory. We have already pointed out that any final adequate psychology of attitude will someday be linked closely with the psychology of learning or conditioning, especially in accounting for the more or less enduring character and for the range of attitudes.

*General selectivity of perception.*—The objective world around us—rivers, hills, trees, buildings, etc.—are, of course, not affected by our perception of them. They are there objectively, determined by physical laws, whether or not we perceive or experience them. On the other hand, what we perceive of the natural and social world around us is highly selective, determined by biological and psychological laws. Because of this deterministic selectivity, men perceive or experience different aspects of the world around them. For example, in the Dark Ages, because of the fact that men were so confined to themselves due to the prevailing social and cultural system in which they were living, they paid little attention to nature (37). It needed, among others, a Rousseau, the rebellious child of the bourgeois system rising against the decaying feudal aristocracy and clergy, to call attention to his fellowmen that nature was around them in all its glory. Today, in India, for example, many people are so much pre-occupied with their mystic ways, that they simply are not concerned and, therefore, do not notice the beauties of nature. We do not have to resort to any typologies to account for these facts, as Jung does, for example (71). At the basis of this selectivity is the bipolar nature of perception—the determination of perceptions by external and internal factors following certain laws, and the formation of certain enduring states of readiness.

The selectivity of perception is a universal human phenomenon not confined to any special cases. As Woodworth puts it in developing what he terms 'situation-set,' "the individual is not an unbiased registering instrument" (141). Anyone can easily cite numerous cases from daily experience that what he ob-

serves and notices around him is a selective matter: what he sees in a strange city, what he reads in his newspaper, etc. It would be very useful to make longitudinal studies of perception also and find out through a period of time what actual items a person does perceive in his surroundings. Such longitudinal studies would certainly reveal the highly selective nature of our daily perceptions as determined by external and internal conditions.

Experiments in the psychological laboratory require subjects, through carefully formulated 'instructions,' to observe precisely certain aspects of the stimulus presented and usually made focal for them in a controlled way. Already some representative laboratory studies furnish evidence of the general selectivity of perception. Here we refer to the long line of investigation started over forty years ago by Külpe when he ventured to study the psychology of the so-called higher mental processes against the vigorous protests of his former teacher, Wundt, who argued for the completion first of the 'mental chemistry' of sensory processes. In Külpe's laboratory it became increasingly evident that the 'set' assumed by the observer as a result of 'instructions,' was playing an important rôle in determining response to the experimental situation. Külpe himself specifically undertook the study of this problem (85). In his experiments he tachistoscopically presented different stimuli, such as printed syllables, about which different aspects or 'dimensions' could be reported, *e.g.*, the *number* of letters involved, the *locations* of the colors, or the *total pattern* composed by them. Külpe found that more items were noted and more correct judgments were made by the observer about that aspect of the stimuli which had been emphasized by the 'set' produced as a consequence of the initial instructions; subjects noticed more fully and in more detail those aspects of the stimulus field they were set to observe. Two decades later Yokoyama and then Chapman verified Külpe's results (15, 38).

In the Külpe line of experiments, the 'set' is produced by the instructions of the experimenter. But the internal factors ('set' in this case) need not always be due to instructional set. In more natural settings some motivational stress, some social pressure, or some established norm in the individual may and does produce the 'set' or 'attitude' with which the stimulus field is observed. Take, for example, the case of a hungry man looking for bread or the case of a lover waiting in a crowd for his sweetheart.

In his impressive series of experiments carried out over a period of years (1913–1932), Bartlett obtained a well integrated series of results on remembering (7). This classical work breaks down the artificial classifactory boundaries imposed between the functions of perceiving, remembering and even imagining. Bartlett unanswerably demonstrated that the perceiving, imagining and remembering of even relatively simple objects are selective—influenced in an important way by the interests, attitudes, temperament, etc., of the observer. He makes his experiments on perceiving the starting point of experiments on remembering, indicating a functional continuity between perception and memory. In the experiments on perceiving (7, pp. 14–33) he presented to his observers simple designs and patterns, and complex pictorial material. His instructions were neutral, *i.e.*, he did not try to produce a 'set' or 'attitude' in the observers in relation to any given aspect of the stimulus field; in fact, he was especially on his guard "against the use of suggestion other than that conveyed by the material itself" (pp. 17–18). His results and conclu-

sions are clear-cut. In his own words, "Very rarely indeed did a subject thus differentiate clearly between a sensory image set up by the stimulating object and his interpretation of the object itself. But, though they did not realize it, the observers were throughout *constantly utilizing an imaged setting or background, for their perceptual reactions*" (p. 30, italics ours). Again ". . . to perceive anything is one of the simplest and most immediate, as it is one of the most fundamental, of all human cognitive reactions. Yet obviously, in a psychological sense, it is exceedingly complex, and this is widely recognized. Inextricably mingled with it are *imaging, valuing, and those beginnings of judging which are involved in the response to plan, order of arrangement and construction of presented material. It is directed by interest and by feeling, and may be dominated by certain crucial features of the objects and scenes dealt with*" (p. 31, italics ours).

The more unstructured and vague the stimulus field is, the more important is the rôle of set and other factors not inherent in the stimulus itself. In one of a series of experiments utilizing the autokinetic phenomenon, Sherif instructed his subjects that the light (which was physically stationary, of course) would move to the right or to the left as the case may be (113). The subjects with the 'set' produced by the instructions gave results generally in harmony with the instructed direction. Recently Haggard and Rose, utilizing the autokinetic technique, but using a device of reward or punishment instead of direct instruction of movement, obtained similar results (58).

From the facts, of which the above are typical examples, it is plausible to conclude in a general way that the selectivity of attitudes is basically imbedded in the selectivity of perception. But this gives us only our general orientation. We must proceed further and try to single out more precisely the processes involved in the formation of an attitude.

*A frame of reference is involved in perceptual and judgmental activity.*— It is an established fact in psychology that stimuli do not have an absolute stimulating value. A stimulus is experienced, perceived, judged and reacted to in relation to other stimuli, present or past, to which it is *functionally* related. In perception this relative character of a stimulus emerges from its relationship in the organized whole (81); in judgments from its relationship to other stimuli (present and past) which are operative at the moment. The concept of 'member-character' expresses the relative nature of the properties of any stimulus the organism is responding to at the moment and can be conveniently used to denote the relative character of any stimulating agent with respect to simultaneous *or preceding* stimuli with which it is functionally related.

The term 'frame of reference' is simply used to denote the functionally related factors (present *and* past) which operate at the moment to determine the particular properties of a psychological phenomenon (perception, judgment, affectivity, etc.). In 1935 and 1936 Sherif brought together a good many experimental facts from various major psychological phenomena (perception, judgment, affectivity, memory, personality, etc.) indicating the way in which a 'frame of reference' is involved in each of them (113, 114). The scale of magnitudes against which subsequent stimuli of a similar kind are judged, the organized perceptual whole which determines the particular relative properties of its parts, the established social status in relation to which responses to other individuals and groups are

shaped, etc., are all specific cases of frames of reference. Unless we have good reasons to argue that frames of reference involved in various psychological phenomena have nothing to do with one another, but express psychological tendencies quite different in nature, such a general concept is needed to denote this whole background of factors which together determine the relative nature of response. Because of the fact that frames of reference are involved in all major phenomena, a more precise definition of frame of reference cannot be formulated until we know more about the frames of reference in various specific cases.

Specific cases of frames of reference are most extensively elaborated in the fields of perception and judgment. Gestalt psychologists worked out in detail the psychology of perceptual frames. In fact, the whole emphasis of frames of reference in psychology is mainly derived from them. All our time and space localizations, magnitude perceptions, form perceptions, perceptions of melody and harmony are referential affairs. When we say 'up' we mean 'up' in relation to something below, when we say 'far' or 'near' we say so in relation to a starting point we have in mind.

With the shifts of the reference frames or points, perceptual relationships are altered. Thus "a book is small and a man is large. But if a house is large, then a man is small. And if a book is small and a house is large, then a man is of medium size" (107, p. 43). Years ago Wertheimer demonstrated that a line is experienced as horizontal or vertical in reference to the position of other things in the field of stimulation: if the observer's visual field was slanted by means of a mirror, a similarly slanted objective line tended to appear vertical, indicating that the position of an object is perceived in its relation to the whole organized field (137).

In our opinion, the psychology of these perceptual frames are basically related to the psychology of attitudes. The forms, proportions and magnitudes of things, buildings, tools, etc., in the village, town or city we live in become for us in time established anchorages. When subsequently, in some other town or country we face different proportions, forms and magnitudes of things, we perceive them against the whole background of our established frames or anchorages. Consequently they seem to us to be too large, too small, queer or disproportionate as the case may be.

Extensive evidence of the referential nature of judgmental activities has accumulated during the past decade. As we shall see later, the implications of this important finding can be carried on to more or less complicated social problems. Chapman and Volkmann, for example, in a significant study on 'A Social Determinant of the Level of Aspiration' start with the general principle that "the conditions which govern the setting of a level of aspiration (*Anspruchsniveau*), in the sense of an estimate of one's future performance in a given task, may be regarded as a special case of the effect upon a judgment of the frame of reference within which it is executed" (39, p. 225). They draw attention to the "general fact that all judgmental activities take place within such referential frameworks" (p. 225). Convenient and concise summaries and discussions of the studies on judgment are found in the reports of Long (90), Rogers (109), and McGarvey (93). Starting with Hollingworth's work on judgment, it became increasingly evident that judgment to a stimulus in a series is based on the whole background of previous judgments belonging to the series and affected by them in definite ways (63,

64). For our present problem, the important fact is that judgments of stimuli shift according to the background furnished by a related series of stimuli, the particular directions of these shifts need not concern our position in this paper. Here it will be sufficient for us to call attention briefly to certain aspects of Long's and Roger's representative studies as they bear on our present problem.

Long studied the effect of preceding stimuli upon the judgments of succeeding stimuli, using series of auditory intensities. Among other things he found that "under certain conditions, stimuli oppose each other in such a way that a weak stimulus preceded by a strong one is judged weaker than it actually is, and vice versa. This is referred to as contrast and its presence has been found in experiments employing a variety of stimuli: namely, tones and weights in the usual psychophysical experiments; and colors, tones, and odors in experiments on hedonic tones. Thus the reality of the phenomenon cannot be doubted, but an explanation of *why* contrast operates or what processes (either psychological or physiological) underlie it, must be postponed until the conditions under which it occurs, or does not occur, are better known" (p. 55).

The studies on judgment with the method of single stimuli that have accumulated during the past fifteen years furnish unequivocal evidence in support of the relativity of judgment. In an increasing number of studies in different sense modalities, it has been shown that the use of a standard stimulus is not necessary for the observer to give a judgment about any stimulus in the series. After a few rounds of presentation of the series, observers spontaneously establish a scale without being instructed to do so. Any stimulus in the series is judged or placed in its relative position in the scale. These experiments in which no standard stimulus is used yield a distribution of frequencies of judgment very similar to that obtained by orthodox psychophysical methods using a formal standard (108).

Here again we see the same referential nature of response observed in cases of perception. With the shifts of the reference frame or scale to which any stimulus is related, a corresponding shift in judging that stimulus results. Wever and Zener (138) gave an observer a 'light' series of weights and after this series had become an 'established' scale for the observer, they suddenly introduced a 'heavy' series. "The effect of the first series on the judgments of the second was quite evident for 20 or 25 presentations, *i.e.*, for four or five rounds judgments of the 'heavy' *predominated* for all the stimuli; from this point on, however, the *judgments showed a redistribution* conforming to the second stimulus series." On the basis of these facts, we may say that the members of a series of stimuli manifest 'member-character' just as parts of an organized perceptual field manifest 'member-character,' revealing 'supralocal' qualities from the functional relationship in which they are found. The member-character of the stimuli in a series is clearly shown in a keen observation of Wedell in his study of pitch discriminations. "It has been said that no judgment is 'absolute' unless a long time, say 12 hours, has intervened since the last hearing of a tone. Following this line of reasoning in the present experiment, the only absolute judgment would be the first one each day. It must be admitted that there is some basis for this assertion, because some of the subjects seemed to compare the notes with one another deliberately. *In addition to this, a subject would sometimes correct a previous judgment*

*by saying 'Oh, that other one must have been (so and so)'"* (135, p. 497, italics ours).

Psychophysical studies dispensing with the presentation of a formal standard stimulus with every variable stimulus in the series were first started by Wever and Zener (138). Because of the fact that no standard was used, and each stimulus was presented singly, the method was designated as the method of 'single' or 'absolute stimuli' and the series of stimulus values as 'absolute series.' Now it is often referred to as 'absolute scale' and the judgments obtained as 'absolute' judgments. It is clear that the term 'absolute' refers to the *method* alone, because stimuli are singly presented without a standard stimulus. 'Absolute' does not refer to judgments or their distribution. The real psychological fact shown in all these experiments is that judgments to subsequent stimuli are *relative* to preceding stimuli of a similar nature. Referring to the generality of this psychological tendency, McGarvey states in her survey of literature in 1943 that "The relativity of judgments of lifted weights, tonal pitches, visual inclinations, etc., is paralleled by the relativity of affective judgments" (93, p. 14).

It is an unfortunate accident to have the term 'absolute' connected with a whole array of facts which definitely reveal the relativity of judgment, perception and, in a word, experience in general. As the term 'absolute' is used in a contradictory way to designate the relative nature of a general psychological tendency, there is bound to appear a contradiction of terms. Thus Cohen, in a study following Beebe-Center's research showing the relativity of hedonic judgments, uses the contradictory title 'The Relativity of Absolute Judgments' (41). The same contradiction of terms is found in a more recent study by Postman and Miller showing the relative nature of temporal judgments. The authors state "An 'absolute' judgment of magnitude is, of course, not strictly absolute, but is formed in relation to other magnitudes that lie within the immediate universe of attention" (107, p. 43, single quotes in original). Again, "Such subjective scales have been called *absolute scales* and perhaps the term is no more contradictory than the term *absolute judgment. Absolute,* in these contexts, means *relative* to the comparable magnitudes that form the immediate context of the judgment" (p. 43, the last emphasis is ours). To designate a tendency by a contradictory term does not help to clarify but only to confuse the issues in question. It may astound people to see that psychologists designate the same thing as both 'absolute' and 'relative.'

It seems to us that nothing is gained by stretching the term 'absolute judgment' and 'absolute scale' (already used in a contradictory way by the mere accident of naming a method) to study the relative nature of response in perceptual and social fields. The relative nature of response in sensory judgments is only a specific case of a more general tendency. For example, contrast and assimilation effects which necessarily appear in judgments, are not effects peculiar to judgments alone. Assimilation and contrast effects appear by simultaneous stimulation (perception) as well as by successive stimulation, as can be easily found in any psychology textbook. Not only are contrast and assimilation effects simultaneous as well as successive—they are different according to the place they occupy in the figure or ground of a perceptual relationship (11). In view of these facts, appropriate specific terms should be used to designate specific cases of reference frames appearing in other major fields of psychology. For example, 'aspiration level' and 'ego-level' may be

used as such referential terms in cases dealing with the experiences of success, failure and status as Hoppe (65), Frank (52), Gould (56) and others have done.

In this connection, Roger's significant study dealing with the anchoring effect of a preceding stimulus of constant value on a scale of stimuli is pertinent. His formulation is aptly offered "as an experimental contribution to the understanding of the frame of reference" (109). His study is based on a previous investigation reported by Volkmann in 1936 (128). Volkmann obtained judgments to a series of visual inclinations, using the method of single stimuli. In the first experiment an 'instructed' position (horizontal) was used as a reference point. As a consequence, the scale shifted and extended considerably in the direction of the horizontal. The second experiment demonstrated that in a similar manner any value which the observer selected and held in mind could exert an appreciable shift in the scale.

Rogers devotes the first part of his study to a discussion of frame of reference and 'absolute scale.' He comes close to characterizing the 'mental formation,' labelled as 'absolute scale' in a contradictory way, as a special case of frame of reference. ('Mental formation' was originally used by Wever and Zener to designate the psychological scale [frame] formed after some rounds of presentation of the stimulus series in these psychophysical experiments.) Rogers states "while it might be argued that the absolute scale, in this event, constitutes a frame of reference accessible to experimental manipulation and investigation, a slightly different view is to be taken here. The frame of reference, it would seem, may most reasonably be seen as the product of a number of influences, notably the influences of stimuli which cannot all be present at any one time" (p. 6). This is true in a general way, but not quite, because the influence of past stimuli, not present *at the time*, may be operative on an 'absolute' scale as well as on any other specific case of a reference frame. For example, in building up a mental scale ('absolute scale') using the method of single stimuli a previously established scale or anchorage even from daily life may come in to modify present judgments. The operation of a frame of reference or a mental scale as a specific case of a frame of reference is detected from the observable determinations or modifications of reported judgments and perceptions. This fact is clearly noted by Rogers, "The frame of reference, then, is inaccessible except in terms of overt responses which it governs" (p. 6).

In the experiments which Rogers conducted, he used the method of single stimuli. His stimulus series consisted of a scale of visual inclinations (in the first experiment) and a scale of weights (in the second experiment). In Rogers' first sessions the usual distributions of judgments were obtained and the usual scales (or frames) were established psychologically. In subsequent sessions, "an anchoring stimulus" was presented just prior to each presentation of a stimulus to be judged and was designated as the top category of the series. The anchoring stimulus, at first the same as the highest stimulus of the range, "was moved progressively further above the stimulus range, remaining always the same throughout any single session." This means that the most frequently presented stimulus was the anchoring stimulus: to be precise, the anchoring stimulus was presented as many times as the total number of presentations of all the stimuli of the series. In a few cases, the values of the anchoring stimuli used were within the upper part of the stimulus range. Rogers' results obtained from both kinds of stim-

always chaos or an inconsistent hodgepodge of reactions. It seems that a tendency to organize and group stimuli is a primary psychological fact based, of course, on underlying properties of the nervous system which competent physiologists will no doubt someday explain. Even in cases where the stimulus field is not well-structured and does not have the properties necessary to impose objectively clear-cut, non-reversible figure-ground relationships, there is usually some sort of organization. For example, campers in a forest on a dark night are apt to see or hear different things around them as determined by their individual attitudes or pre-occupations. But in such cases, internal factors are important in determining the properties of the resulting organizations.

The margin of possibilities for the contribution of internal factors allowed by unstructured situations is at the basis of many studies dealing with the problem of individual peculiarities, personality differences, abnormal tendencies, etc. We find here the basis of the projective devices currently flourishing. The use of unstructured ink-blots for detecting characteristics of the individual was suggested and used by G. V. Dearborn back in the end of the 19th century (43, 44). Others soon followed him. Bartlett used a series of ink-blots in his studies on remembering. The recent extensive systematic uses of projective methods based on the Rorschach ink-blots or Murray's thematic appreception test are well-known (77, 99). Voth recently studied personality differences 'as expressed through various forms and amount of autokinetic perception' using autokinesis as an unstructured, unstable stimulus (129). In more recent studies, Voth has used the autokinetic phenomenon as an index to pathological tendencies and has found fairly high correlation between indices thus obtained from his patients and medical diagnosis (130).

*Gradations of structure in the stimulus field.*—We have considered cases of structured and unstructured stimulus situations: in the former cases the resulting psychological outcome is compellingly determined by the objective situation, in the latter cases a variety of internal or subjective factors come into play to shape response. Actually, of course, there are all kinds of gradations between these two extremes of structuration.

Recently Luchins used gradations of structure or ambiguity in a series of studies on the social influences involved in the perception of complex drawings (92). The conclusion that can be drawn from these studies is that the effects of social influence (the various devices of suggestion used in the experiment) vary with the degree of ambiguity of stimuli presented. The greater the ambiguity of the stimulus, the greater is the effect of attempted social influence. In a previous study in which the stimulus gradations were too few and too abrupt to allow the possibility of graded comparisons, Luchins seems to reach a similar conclusion: "Whether or not subjects were influenced by A's judgment ['A' being the influencing subject in the experiment] *seemed to depend on the obviousness of the correct answer, i.e.,* the clarity of the judgment-situation, on the truth or falsity of A's judgment, and also on the subject's attitudes to and interpretations of their task and the experimental situation" (91, p. 110, italics ours).

Coffin designed an experiment to study the relationship of suggestibility to the ambiguity of a stimulus situation. The tonal attributes of pitch, volume, and a fictitious attribute created for the experiment and labelled 'ortho-sonority' were used as the three tonal attributes varying in ambiguity. Subjects were

given a tonal stimulus and then, after each tonal dimension had been defined, were told to equate the succeeding tone heard through their head phones with the original stimulus by turning the appropriate dial which was ostentatiously labelled. Subjects were divided into experimental and controlled groups. Results showed that the least ambiguous tonal attribute, pitch, was in most cases not subject to change by suggestion. Volume, on the other hand, could be reversed by suggestion with most observers, while judgments of 'ortho-sonority' invariably followed the experimenter's suggestion. In other words suggestibility to these attributes increases with their ambiguity (40).

In a study dealing with social determinants of the level of aspiration Chapman and Volkmann produced changes in the standards of their subjects by introducing into the situation a hierachy of standards the truth or falsity of which could not be objectively tested by the subjects. But in a subsequent experiment, after the subjects had considerable experience with the task at hand, the introduction of new standards did not shift the standards of the subjects. With such results in mind, Chapman and Volkmann state that "the lability of the judgment, for example, varies inversely with the determinateness of the frame of reference" (39, p. 225). As we shall see later, Asch and his associates get similar results. Cantril's studies of a panic situation and various social movements substantiate the implications of these results on a highly complicated level. While research is still scanty which deals directly with the comparative effects on perception and judgment of gradations of structuration in the stimulus field, from the meagre results obtained thus far we may formulate as a working hypothesis that, *all other things being equal, the rôle played by internal and social factors decreases with the stability, clarity or structuredness of the stimulus situation and with the strength of frames or points of reference already established.*

As we have remarked above, material objects, technological and other products of human labor, have a compelling effect in producing corresponding frames in the psychology of men. If the actual truth of all man's individual and social relationships were compellingly imposed on him in daily life, then he would not have any lasting and organized false attitudes. But he actually does have false attitudes about things, especially those he has never seen for himself or closely scrutinized. He has definite attitudes about gods, about life hereafter, and imposed attitudes concerning peoples about whom he really knows nothing.

As formulations and standards have been achieved in science through the laborious and not infrequently persecuted labors of scientific workers such as Galileo, science has changed and corrected many obsolete, 'survival' social norms and corresponding attitudes. False norms and practices connected with natural events have been corrected and have yielded their place to scientific formulations in the modern world, although there are exceptions such as the norms of Christian Science. However, in social and economic relationships and in the whole superstructure of norms determined by them, many survivals remain. Until social systems base their premises and practices on strictly scientific grounds, 'survival' norms and attitudes filtering down from different historical periods and outmoded systems will continue to function. The social system that erects itself on a scientific basis is still the exception rather than the rule. In view of this fact, the psychologist who renders a real service is the one who takes a realistic stand and studies human nature and social sys-

tems as they really are, not the one who bases his arguments on the inherent goodness or evil of man or the will to truth as Hobbes and Rousseau did in their times and as the advocates of an unchanging 'human nature' are doing today. The more various interest groups strive to perpetuate obsolete superstructures of norms, the more important it is to study social organization objectively. Many an historian and social scientist has observed that unstable, ambiguous and critical situations are those which provide especially fertile soil for the formation and inculcation of social norms.[8]

In the following paragraphs we shall try to typify experimentally the basic psychological processes involved in the formation of frames in unstructured situations. Admittedly, the studies are carried on in artificial and miniature laboratory situations. In presenting them we claim only that they are a starting point for conceptualization, the validity of which will be tested out with more concrete social material in actual situations.

*Formation of a frame in an unstructured situation.*[9]—In line with the above discussion, the psychologist must find an unstable, unstructured stimulus situation, present it repeatedly to the individual to see if he will structure it somehow to a framework of response—proceeding with the hypothesis that psychological organization or grouping is a primary fact in unstructured as well as in structured situations. And if stimuli are organized by the individual, then the further question is, will they be organized by the members of a group collectively, will members of a group eventually form a frame peculiar to the group? This query lies at the basis of the psychology of what sociologists such as Durkheim, drawing a sharp dichotomy between individual psychology and social psychology, argue so strongly concerning the supra-local, *suis generis* character of collective values or 'representations' which *emerge* only as a consequence of collective behavior (46).

The autokinetic phenomenon is one of various experimental possibilities that conveniently lends itself to a test of frame formation when the stimulus is unstructured. In a pitch-dark space a single point of light seems to move and to move in different directions. It seems to move because there is no frame of reference to give it a stable localization. With the introduction of other visible points or objects the point gains stability relative to these points, since all psychological localizations are relative affairs. Even the introduction of sounds in the vicinity of the point seems to affect its stability.

The first experiment in the series studied the formation of a frame (or scale) in the *individual alone,* thus starting with the general psychology of frame formation. The stimulus light was presented briefly and successively one hundred times in each experimental session. The time of exposure after the perceived movement started was the same in all presentations. This was true for all sessions, individual and group. The observer was asked to report the extent of the perceived movement. The results unequivocally indi-

[8] It might be pointed out here that no realistic purpose is served by conducting experiments of the type in which the attempt is made—by introducing various social influences—to have a subject perceive a perfect square as a circle. In such obvious cases, no problem is involved and nothing is gained by declaring as a conclusion in the face of such a compelling stimulus determination, "Ah ha, people cannot be influenced to perceive a square as a circle, thus they reveal their inherent will to truth."

[9] When not otherwise specified, the results to be summarized here refer to Sherif (113, 114). These references may be consulted for the detailed description of the experimental situation, procedure, subjects, instructions, etc.

cate that, even though a scale and reference points are lacking in the objective situation, in the course of the experimental session individuals spontaneously form a frame and a central tendency (standard) which may differ from individual to individual in the absence of a compelling objective range of stimuli. In other words, in the absence of an objective scale (frame) and objective standard (reference point) each individual builds up a scale of his own and a standard within that scale. The range and reference point established by each individual is peculiar to himself when facing the situation alone.

In the second part of this first experiment it was found that once a scale is established there is a tendency for the individual to preserve this scale in subsequent sessions (within a week in these experiments). The introspective data obtained furnish further evidence of the formation of a frame. Most typical examples of such introspection are: 'Compared with previous distance'; 'Judgments are all relative'; 'Compared successive judgments'; 'First estimate as standard.' Although the subjects do form frames of reference of their own spontaneously without being instructed to do so, the lack of an objective frame of reference is experienced. The following introspections are typical: 'Darkness left no guide for distance'; 'Lack of visible neighboring objects'; 'No fixed point from which to judge distance.'

(Part II, which contains the list of references for the entire article, will appear in the January issue.)

# PERSONALITY AS A WORK OF ART

BY J. W. BRIDGES

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A few years ago in a small volume entitled *Personality, Many in One* the writer suggested without elaboration that the structure and development of personality is analogous to a work of art. The present paper is a more explicit statement of that point of view together with some of its implications for education, guidance and social ethics. The main thesis will be presented in outline form, leaving to the reader the task of filling in the details in accordance with his own views on art and psychology; for the principle may be accepted without agreement on its meaning or applications.

In the first place personality is 'a work of art' in contradistinction to 'a work of nature,' though to be sure some basic materials are supplied by nature. But the writer's contention is that personality is also a work of art in the aesthetic sense, and of course, like any other work of art, may be original or commonplace, creative or derivative. In other words, personality is a *Gestalt* and it may be a 'good *Gestalt*' (7).

Now it can be shown more or less satisfactorily that the basic principles underlying all art are the same. They are found equally in architecture, sculpture, painting, music, dance, and poetry (5, 8, 10). But it is just as clear that the significance of any art varies with time and place. The constant features cannot therefore be 'significant form,' in the words of Clive Bell (2, 3), but rather pure form. Since these formal elements are universal, they are probably innate. But whether they are, as James suggested of the necessary truths (9), determined by the biological nature of man, or *a priori* in the Kantian sense, can remain an open question. In any case they are manifested in both mind and nature. As aesthetic principles they require no special defense or discussion but merely an indication of their application to personality.

1. *Balance.*—The ideal personality of many writers from ancient to modern times is the balanced personality. This ideal is implied, for example, in Plato's theory of education, in Aristotle's concept of the golden mean, and in all ethics of moderation and aesthetic theories of the good life. Now, recently, the mental hygienists have been telling us that the balanced life is the mentally healthy life, and Marie Beynon Ray adds more specifically that healthful balance requires a vocation, an avocation, social activity and physical exercise (14). Others have suggested a psychological balance of intellect, feeling and will, of introversion and extraversion, of contemplation and striving. As the poet expresses it: "The golden mean betwixt them both doth surest sit and fears no fall." But as in Art, so in personality, many kinds of balance are possible—complicated, indirect and suggestive as well as symmetrical.

2. *Proportion.*—This is the emphasis in art, the scale of values in personality. Proportion is the theme of authorities on the *summum bonum* and the lesser 'goods' in life from Socrates to Spranger (16) and scores of recent writers on the dominant and minor values. All seem to agree that a well-adjusted personality has a scale or order of values. This means a perspective on life that prevents circumstantiality and 'total redintegration,' as well as harassing doubts

and chronic indecision on matters of practical everyday living.

3. *Rhythm.*—Life is full of rhythms —indeed it may be regarded as a kind of rhythm. The physiological rhythms are obvious; but there are also mental rhythms—in mood, in activity and passivity, in creative thought, in the intake and output of mind. Rhythm is the repetitive aspect in the sequence of an everchanging experience and a basis for normal anticipation and prediction. It has many striking abnormal manifestations in affective cycles and 'repetition compulsions' in thought and behavior.

4. *Unity.*—The *sine qua non* of both art and personality, variously expressed as unity in variety, order in complexity (4, 7), or one in many. This unity or integration of personality is an achievement of major importance for mental health, as witness the works of Janet, Prince and a host of more recent writers. It involves self-knowledge, resolution of conflict, and the attainment of that inner harmony which sets the intellect free and releases the energies for direction towards the chosen goals of life.

Unity, as in artistic composition, also involves balance, proportion and rhythm; and just as the 'aesthetic measure' is order and complexity, so the measure of personality may be taken as integration and manifoldness of content. Integration means harmony of components, which may involve consistency of dynamic patterns or, as Allport has shown, congruence without consistency (1).

To these formal elements we must add *uniqueness*, which cannot be separated from significance. Every work of art has significance (varying, of course, with time and place), and its value is mainly dependent upon its uniqueness. Likewise a personality is a meaningful unit in a social complex, and its uniqueness is another measure of its worth. Affected and commonplace personality is like derivative and copied art.

Many questions will arise: What are the materials for the building of personality? What are the techniques? Who is the artist? And various answers may be suggested. The materials are the inherited constitution of the individual: the biological drives, the sensory and motor capacities, the capacity to learn, the potentiality for feeling and emotion. To these we may add the physical, social and cultural environment into which the individual is born.

The main technique of personality building is the learning process, through which the organism, in the attempt to satisfy the basic needs, acquires the differentiations and integrations constituting knowledge, behavior and the 'value-attitude system' of the cultural background (12). But another related technique is the imitation of the primary and secondary models in the family and social environment as the individual plays the successive roles which result in a composite pattern of social behavior, the objective aspect of personality (13).

Who is the artist? This question raises a metaphysical problem. Is it the transcendental or absolute ego, which in Fichte's terminology posits the non-ego? But let us remain on the empirical and positivistic plane. Then, first of all, the artist is the mother, the nurse, the father, the teacher, the whole cultural situation; but it soon becomes the individual himself (the empirical self) who can now take stock of himself and consciously seek balance, proportion, rhythm, unity and uniqueness as he grows in knowledge, skill, social attitudes and behavior.

This view of personality has obvious implications for education. It stands squarely against 'paternalism,' whether of the pampering or the stern and regimenting kind. The individual must

learn to be a person, to stand on his own feet, to make his own decisions; for creative art is superior to derivative. Therefore, education must be for insight and understanding—insight into one's own mental processes, understanding of things, of people, of ideas. Thus, a student should be taught to understand a doctrine or theory but not necessarily to believe it. That is a matter for his own mature and considered judgment. This is education without propaganda—and the ideal education for democracy (6), which requires strong, self-reliant men and women, who are neither dominating nor submissive but mutually cooperative in their socially equal but different and complementary rôles.

Similarly, guidance and counseling should be non-directive (15). The pupil or student is given the external facts and the insight wherewith to make his own decisions. His problem is recognized and the factors related thereto brought into the light of day, but he is not told what to do. In this way he learns to overcome that dependency, the product of overprotection (11), which is now regarded by many authorities as the basic factor in every neurosis. The counselor must therefore check the impulse to manage other peoples lives, just as his client must overcome the tendency to shirk the responsibility of making his own decisions. The integration of personality, like the unity of composition in art, can be achieved only through continuous application and personal effort.

In ethics this view implies the value of freedom—freedom in the sense of self-determination. Everyone should be free to build his own personality, no matter whether in the outsider's opinion he builds well or badly. That can only be judged in relation to goals and values, that is to say, in relation to 'what the artist sets out to do.' This view also emphasizes the worth of personality and considers its development as the *summum bonum*. It affirms the ethical value of compromise, finding a middle ground rather than standing firm for an ideal or a cause and thus precipitating individual or national conflict. And finally it tends to identify the good and the true with the beautiful. "Truth is beauty" because like beauty it brings order into complexity; and goodness is also beauty, because the fully integrated personality, which has achieved that 'inner stillness,' is *ipso facto* the good personality. At least these are the only definitions of truth and goodness that in the writer's opinion have a semblance of universal validity.

Thus the view that personality is a work of art and could be a better work of art is in harmony with enlightened trends in education and with recent views on non-directive counseling. It is interesting and encouraging to note that the aesthetic personality, which can be achieved, is not only a good personality and a mentally healthy personality, but also at the same time a personality trained to play its rôle as a free and self-reliant unit in a coöperative and democratic society.

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# AN EXAMINATION OF THE TREATMENT OF STIMULUS PATTERNING IN PROFESSOR HULL'S *PRINCIPLES OF BEHAVIOR*

BY PAUL E. MEEHL

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In his *Principles of Behavior* (2) Professor Hull has made a noteworthy attempt to derive the well-known empirical phenomena of stimulus patterning from more 'primary' principles in the general theory of behavior developed in that book. In the light of the continuing controversy among theorists as to whether such phenomena are reducible to more general principles or must be taken as primitive in a logical system of behavior, a successful effort in this direction would constitute an advance. Of course it is possible to develop alternative deductive systems eventuating in the same theorems but beginning with different selections of the primitive propositions, such that in one system of behavior configurational laws would appear as axioms while in another they would be derived. Perhaps a better formulation of the controversial point would be whether a set of nonconfigurational postulates can be found such that the empirical laws of patterning may be derived as theorems. It seems to the writer, however, that the basic issue is not whether configurational propositions enter at all, since it would be cumbersome and unnecessary to attempt to exclude them in the description of the stimulus side. Rather, the controversy is over the question 'Must postulates regarding the reactivity of the organism include the discrimination of stimulus configurations?' The present writer is wholly sympathetic to a reductive attempt and is without bias in regard to the sanctity of the 'configuration'; but it does not appear that Professor Hull's attempt can be called really successful unless the notion of 'reduction' is stretched to an unwholesome degree in order to bring his treatment under that description. The present paper will attempt briefly to defend this statement.

In the first place it is necessary to inquire in very general terms what such a reduction can be reasonably expected to achieve. What problem does the theorist face in such an attempt, and of what would any genuine 'solution' have to consist?

In a note at the conclusion of his chapter on the patterning of stimulus compounds, Professor Hull says:

> "*Gestalt* writers frequently leave the impression that an adequate derivation of the reaction of organisms to stimulus configurations is *a priori* impossible from behavioristic or nonconsciousness principles. The position of the present work is that such a derivation is not only possible, but relatively simple and straightforward. Moreover, the preceding pages have presented a number of such deductions, thereby showing the *Gestalt a priori* claims to be mistaken. Meanwhile it remains to be seen whether *Gestalt Theorie* can itself mediate comparable deductions. Clearly, no dispute exists as to the genuineness or the importance of the patterning of stimulus compounds; the difference of opinion concerns, rather, the logical question of whether stimulus patterning is a primary or a secondary principle" (2, pp. 379–380).

It is necessary to distinguish the question whether 'conscious' principles are required to arrive at such a derivation, from the different question whether con-

figurational premises are required. It is clear, I think, that one can include thoroughly 'configurational' laws in his primary propositions regarding behavior without making any reference to consciousness. For example, one may reinforce an organism when it makes a certain response in the presence of a discriminative stimulus consisting of three red lights in a horizontal row, but not if it responds to the 'same' three lights when the middle one is raised so as to form the 'pattern of a triangle.' One must recognize that aside from the discriminative capacities of the organism involved, the two stimulus situations differ objectively from the standpoint of the physicist as well as the psychologist. It is of course a mistake to speak as if the physical stimulations were identical and the only difference lay in the pattern-building propensities of the animal. It is logically impossible that any stimulus equivalence or non-equivalence which could be considered at all in a science of behavior would involve physically common (or disparate) properties on the stimulus side whose complete description would transcend the power of contemporary mathematical analysis, although it is already clear that such a description will often be of a high order of complexity. The point I wish to stress is that the physical description of the stimulating field can include what amount to configurational descriptions, and that hence configurational laws can be stated of which behavior is the dependent variable, without any recourse to 'consciousness.' It may be found impossible to accomplish a reduction to basic behavioral laws in which these configurational judgments do not appear, and yet it would remain possible to retain a thoroughly behavioral definition of the subject-matter. In the case described above, for example, it might turn out that one could not give an adequate description of the discriminative behavior of a dog so trained unless the defining property of the discriminative stimulus class was one of 'triangularity.' There is no reason to consider such an eventuality as disconcerting, since the specification of a 'triangle' is just as much a possibility for the mathematical description of the physical stimulation as, say, that of a sinusoidal function for a pure tone, or a decreased frequency for a light wave. It is not my contention that such irreducibility will ultimately be found, but merely that if it should be found it would constitute no real threat to a consistently behavioral formulation of the material. In what follows I shall take the complete independence of the 'configurational' and 'consciousness' requirements for granted, and confine my discussion to the former.

The problem with which we are presented is that of deducing the well established empirical laws in which configurational words and sentences appear, from a set of postulates of a more general character in which they do not. The first thing that seems apparent from this formulation is that the derivation of such a special case as that of Woodbury's dog (2, p. 351) can hardly be said to substantiate Professor Hull's assertion that he has shown the Gestalt claims to be 'mistaken.' It is not made clear in Professor Hull's chapter how he intends to pass from the case of reinforcing a response to two auditory stimuli separately but extinguishing it in the presence of their combination, to the more important and typical case of discriminating 'patterns' in the visual field and the like. I do not mean to deny *a priori* a continuity among these cases, but it would seem that the successful derivation of the empirical findings for the more commonly mentioned case ought to be carried through before one can say that the Gestalt claims are 'mistaken.'

However, let us ignore this criticism and assume that whatever success attends the analysis of Woodbury's experiment may be tentatively generalized for patterning phenomena collectively. Even so it is hard to see wherein any genuine 'reduction' has been accomplished. The case of patterning with which Professor Hull is concerned is the relatively simple one in which two conditioned stimuli receive a different evocation strength when presented together from what might be expected knowing their strengths separately. Thus one conditions a response to a buzzer and also to a tone, and then presents both stimuli at once. That the strength of the response to the combination is less than what would be predicted had the two component strengths been simply added, is called 'spontaneous patterning.' It is further known that by reinforcing a response in the presence of the two stimuli when presented separately and never reinforcing it in the presence of the combination, the strength of the response in the presence of the combination may be made very low in spite of the maintenance of the same response to the separate components at very high strength. This is referred to as 'patterning by differential reinforcement.' The problem is to derive these findings from more 'primary' conditioning principles previously stated in the book.

There is of course no experimental or *a priori* reason to expect the habit strengths in question to simply 'add,' any more than there is for expecting them to combine in any other arbitrary fashion. I mention this only because there is a tendency to think of the fact that a dog may salivate to a light or to a buzzer but not to both at once as being somehow 'unreasonable' and surprising, although I do not attribute this psychology to Professor Hull. Directed forces do not simply 'add,' temperatures of mixed fluids do not simply 'add,' and there is no good reason for expecting that topographically overlapping habits should do so.

The general sequence of inferences which Professor Hull employs in order to derive the patterning effect in question from simpler principles is simple and straightforward, as he says. He makes use chiefly of two of his postulates, the postulate which states that "afferent neural impulses interact . . . in such a way as to change each other . . ." (Postulate 2), and the postulate which states and quantifies stimulus generalization (Postulate 5), together with his Major Corollary I which describes the manner of addition of habit strengths involving the same reaction but diverse stimuli (2, p. 199). In essence what he says is that the presentation of a second stimulus brings about an alteration in the afferent neural impulse of the first, and conversely. Since it is actually the afferent impulse and not the physical stimulus itself which has been conditioned, this change results in a decrease of the effective habit strength because of the existence of a stimulus generalization gradient previously postulated. In the case of patterning by differential reinforcement, use is made of the same kind of reasoning, except that here is invoked also the gradient associated with the incomplete generalization of inhibition.

Now the objection here offered to this procedure is not that it involves any statements one would care to deny, but that it is very little more than a restatement of the empirical phenomenon of patterning combined with a non-contributory localization of the processes in the nervous system. I am unable to see how Professor Hull is really saying anything more than "all of the stimuli presented exert some influence upon the animal, and if this influence is great enough it will show itself by a differ-

ence in the overt behavior. The chief locus of this influence is the animal's nervous system." The manner in which this 'interaction' takes place is not described or even hinted at. The neurophysiological laws are not stated, nor are the more exact loci given. For two visual stimuli the interaction can be readily thought of as retinal from the structural possibilities available, whereas between a tone and a light one cannot conceive of their 'interacting' until they have ceased to be 'afferent' impulses at all. The fact that the term 'afferent' does not really imply anything as to the locus of the interaction is made clear by Professor Hull in a more recent article on this subject (3). Unless one is able to state something in greater detail about the 'molecular' processes actually concerned in mediating the behavioral facts described, it seems to me that we have here an example of what Skinner has referred to as the use of C.N.S. to mean 'conceptual nervous system' (4, p. 421). The desired quantitative properties of the explanatory nervous system are constructed wholly from the properties of the behavior itself rather than from an independent investigation in the study of neurophysiology. It is not that the neural interaction hypothesis is to be denied, or even seriously questioned; it is rather that it has nothing to recommend it over the already admitted fact that the presentation of another stimulus often makes a difference in the behavior of the organism. It is of course no objection to a deductive-empirical system to point out that the theorems are contained in the postulates, inasmuch as some fallacies must have been committed in getting to the theorems if they were not so contained. But there is, it seems to me, a great difference between the way in which the laws of gases are 'implicit' in the dynamical theory of gases, and the way in which patterning is 'implicit' in Professor Hull's postulates. If the reduction of patterning to other principles is to be viewed as a genuine one, it must do more than reiterate the configurational facts as behaviorally observed and then assign the underlying processes to neural tissue. It is hard to see how Professor Hull's treatment does any more than this, except as regards the application of Perkins' equation to the material. It is in the use of this equation that one passes from a mere statement of the fact of interaction to a quantitative law regarding it, even though the data given in Professor Hull's book are wholly hypothetical cases. I shall examine this application of Perkins' equation in a moment.

Suppose one took the thoroughly positivistic attitude that the simplest way to handle this case is to include 'membership' (4, p. 171) as a way in which stimuli may differ. Thus a composite stimulus $S_aS_bS_c$ has 'membership' in common with another $S_aS_gS_h$ and to that extent one can expect some generalization to occur between them. The amount of generalization that will occur depends upon specific parameters admittedly not given immediately by this formulation, but in this respect Professor Hull's treatment is no better off since the specific parameters of his gradients of excitation and inhibition and the specific amounts of afferent neural interaction that occur are unknown and given purely hypothetic values in his illustrative examples.

'Membership' can even be made a special case of the stimulus generalization gradient, although such treatment does violence to our usual way of thinking. Consider a stimulus compound $S_aS_b$ and another compound $S_{a'}S_b$ in which the prime indicates a change in intensity. Then on the basis of Postulate 5 (2, p. 199) alone one does not expect the generalization of excitation (or inhibition) from one of these to the

other to be complete. Professor Hull includes a curve (2, p. 186) showing the gradient of stimulus generalization for intensity in one particular experimental situation. The greater is the change in intensity represented by the prime, the smaller the generalization from the one compound to the other. If one were determined to be very parsimonious in the number of postulates, he might try to avoid the afferent neural interaction principles in favor of Postulate 5 alone, emphasizing that there is no special reason for introducing a theoretical discontinuity at the particular point where $S_a'$ falls below the threshold and the organism is then being effectively stimulated by $S_b$ 'alone.' I do not advocate this formulation but merely wish to indicate its possibility and suggest that it does no violence to the facts. Including 'membership' as a special case of stimulus generalization enables one to make the same inferences as Professor Hull. Here, just as in his case, the postulate is not very useful until the specific quantitative properties of the gradients involved are known. But in a general way it is clear that one would expect the generalization from tone to tone plus buzzer to be incomplete, on the basis of the stimulus generalization gradient alone. Similarly one would expect the generalization from buzzer alone to tone plus buzzer to be incomplete in the complementary case. Hence the combination of tone plus buzzer evokes the incompletely generalized strength of two habits (with the same response topography) and one should expect the result to be less than the simple sum of the two habit strengths separately.

The preceding remarks do not treat of an important aspect of Professor Hull's chapter, namely the fact that he does more than merely attempt to elucidate how stimulus patterning can occur *at all*. In addition to this, he gives an account of the hypothetical quantitative relationships that obtain. It is readily conceded that if this quantitative relationship had been correctly deduced, it would have constituted a genuine contribution to analysis. For while the fact of patterning would be expected upon grounds given in Postulate 5, this postulate merely refers to the 'difference' as determining the degree of decrement along the generalized continuum, and the detailed quantitative properties of this 'difference' are not given. In the more recent article previously cited (3), Professor Hull neglects for simplicity the exact manner of addition of the generalized potentials, devoting his attention more to the possible mathematical form of the afferent neural interaction gradients themselves. No comment on his proposed function can be made here since Professor Hull suggests it as a mere possibility and as yet no empirical evidence exists for evaluating its adequacy. The more precise treatment he refers to as being in the book is the one under present consideration. Presumably they are to be determined separately for the various cases that arise, such as the one-stimulus case of altered pitch, the two-stimulus case in which the intensity of one member of the pair is increased or decreased, and the sub-case of this latter in which the decreased intensity lowers the one stimulus of the 'patterned' pair below the threshold—the chief case under consideration in Professor Hull's chapter. If this quantification were successful, the chapter on stimulus patterning would be of the greatest importance even though the preceding arguments were accepted as correct. Unfortunately the quantification as it stands can hardly be of great value because its derivation contains a serious mathematical limitation upon the use of the equations proposed.

The equation used by Professor Hull is the so-called 'Perkins equation,'

which was originally derived by Perkins for use in the paper on 'The problem of stimulus equivalence in behavior theory' (1). That derivation is expressed in terms of the summation of excitatory potentials for the same reaction conditioned to two different points on the *same* stimulus continuum, but the required assumption of 'physiological addition' can be readily restated for the case of two conditioned stimuli on different continua. In the original paper the required assumption reads:

"Let it also be assumed that overlapping generalization gradients combine in the same manner to produce a joint excitatory potential as would two sets of repetitions each sufficient to produce one of the generalized excitatory potentials in question" (1, p. 20).

That is to say, instead of adding the actual excitatory potentials of the components to obtain the resultant, it is required to add the reinforcements given to the two components and apply the resulting number in the basic formula, which is a simple positive growth function. Due to the non-linearity of the dependence of excitatory potential upon *n*, this result is smaller than would be obtained by adding the original excitatory potentials in question directly.[1]

The variation on this assumption which extends to the case for diverse stimulus continua, in which the only common experimental variable is the response itself, is stated in Professor Hull's Major Corollary I, as follows:

"All effective habit tendencies to a given reaction, whether positive or negative, which are active at a given time summate according to the positive growth principle exactly as would the reinforcements which would be required to produce each" (2, p. 199).

This postulate is expressed more succinctly in mathematical form by 'Day's equation' (2, p. 200), of which the Perkins' equation (as modified to apply to different stimulus continua) is easily seen to be a special case. The derivation of Day's equation is not given in Professor Hull's book and for purposes of criticism it must be given here. Day's equation reads

$$_{n}H_{r} = \Sigma_1 - \frac{\Sigma_2}{M} + \frac{\Sigma_3}{M^2} - \cdots + (-1)^{n-1}\frac{\Sigma_n}{M^{n-1}}$$

where $\Sigma_1$ is the simple sum of the excitatory potentials to be combined, $\Sigma_2$ is the sum of the products obtained by multiplying all of the excitatory potentials involved in all possible combinations two at a time, $\Sigma_3$ is the sum of all possible products of such potentials taken three at a time, and so on. $M$ is here the physiological limit of the learning process, in other words the asymptote which the growth functions in question progressively approximate with succeeding reinforcements. The proof of this equation is as follows:

Let a response $R$ be conditioned to a set of stimuli $S_1$, $S_2$, $S_3$, . . . $S_k$ not excluding the case in which these stimuli belong to different continua or even different modalities. The usual objection that the response will be somewhat different depending upon which is involved need not detain us, since we are concerned with a quantitative treatment of certain selected (relevant) properties which define the class '*R*' and do not propose to include in one equation the organism's 'behavior as a whole.' Then if $y_j$ is the habit strength conditioned to the stimulus $j$, the entire set of habit strengths can be arrayed as follows, in

[1] There is a confusing combination of typographical errors in the original article (1) with regard to Perkins' equation. On page 21, equation (8) should read

$$E_{r_1+r_2} = E_{r_1} + E_{r_2} - \frac{1}{A}E_{r_1}E_{r_2}.$$

accordance with Postulate 4 which states the dependence of a single habit's strength upon the number of reinforcements as a simple positive growth function:

$$\begin{aligned} y_1 &= M(1 - e^{-iN_1}) \\ y_2 &= M(1 - e^{-iN_2}) \\ &\vdots \\ y_k &= M(1 - e^{-iN_k}). \end{aligned} \qquad \text{(A)}$$

The mathematical statement of Major Corollary I is clear directly from the verbal form, since we have merely to consider a single positive growth function in which the reinforcements-variable is the sum of the values of $N$ necessary to yield the component habit strengths involved. Thus, if $y_t$ is the total habit strength to the compound,

$$\begin{aligned} y_t &= M(1 - e^{-i(N_1+N_2+N_3+\cdots+N_k)}) \\ &= M(1 - e^{-iN_1}e^{-iN_2}e^{-iN_3}\cdots e^{-iN_k}). \end{aligned}$$

If we return to the equations (A) we can express all of the negative exponential terms in terms of the component habit strengths, which is what we wish the final equation to do. Substituting these values in the above,

$$\begin{aligned} y_t &= M\left[1 - \left(1 - \frac{y_1}{M}\right)\left(1 - \frac{y_2}{M}\right) \times \left(1 - \frac{y_3}{M}\right)\cdots\left(1 - \frac{y_k}{M}\right)\right] \\ &= M\left[1 - \prod_1^k\left(1 - \frac{y_j}{M}\right)\right] \end{aligned}$$

where $\prod_1^k$ indicates the product of all the terms of form $\left(1 - \frac{y_j}{M}\right)$.

It is shown easily by mathematical induction that an alternative algebraic form for the total product of such a set of complements $(1 - x_1)$, $(1 - x_2)$, $(1 - x_3) \ldots (1 - x_m)$ is given by

$$\begin{aligned} &\prod_1^m(1 - x_j) \\ &\quad = 1 - \Sigma x_j + \Sigma x_i x_j - \Sigma x_i x_j x_k \\ &\qquad + \cdots + (-1)^m \Sigma x_i x_j x_k \cdots x_m. \end{aligned}$$

Taking the $x$'s in the above general algebraic identity as the terms $\frac{y_j}{M}$ and substituting, we have

$$\begin{aligned} y_t = \Sigma y_j - \frac{\Sigma y_i y_j}{M} + \frac{\Sigma y_i y_j y_k}{M^2} - \cdots \\ + (-1)^{m-1}\frac{\Sigma y_1 y_2 y_3 \cdots y_m}{M^{m-1}} \end{aligned}$$

which is the form given as Day's equation. When only two habits are concerned, this reduces to the Perkins' equation published in the earlier paper.

An examination of the preceding considerations shows immediately a serious defect in Professor Hull's application of the formula, such as to invalidate the quantitative treatment given to the problem of stimulus patterning, for the vast majority of concrete cases. It is required in the derivation that the parameters $M$ and $i$ should be identical in value for all of the component habits to be summed. Any alternative derivation differing in minor algebraic details could evidently not escape this restriction as long as it makes use of Major Corollary I as stated in Equation (1). That is to say, both the asymptote of the growth function expressing strength as a function of number of reinforcements, and the negative exponential constant $i$ which expresses the *rate* of growth (and thus $F$, the fractional growth increment per reinforcement) must be quantitatively identical for all of the habits to which the equation is to be applied. Thus if we condition a dog to salivate to a tone and also to a buzzer or a light, both of these conditioned responses must

approach the same final state of strength after maximal reinforcement, and both must grow at the same rate. Now it is pointed out earlier in Professor Hull's book (2, p. 207) that this is actually very rarely the case, and he spends over two pages discussing the various factors which may be employed to account for this difference, such as the finding of Pavlov that different modalities do not condition equally strongly, that the intensity of the conditioned stimulus makes a difference, and so on. If we take any actual case of stimulus patterning, even in the controlled conditions of the laboratory, the Perkins' equation can be of no use to us in most cases because its derivation requires two assumptions about the growth of habits conditioned to different stimuli which are almost certain to be false.

In Professor Hull's chapter on the patterning of stimulus compounds, he makes use of several numerical examples which involve mathematical contradictions because of this fact. For example, he says:

"Let it be assumed that by the Pavlovian technique a simultaneous stimulus compound of two components ($S_1$ and $S_2$) is conditioned to a reaction ($R$) strongly enough for $S_1$ to command a habit strength of 40 habs and $S_2$ to command a habit strength of 60 habs" (2, p. 356).

Now if the simultaneous conditioning of the two habits has resulted in the acquisition of these two different habit strengths, we know that either the constant $M$ or $F$, or both, must be different in the equations for their respective rates and asymptotes of growth. Yet after setting the drive at unity, Professor Hull goes on to say,

"Now, by the physiological summation of these two excitatory potentials, we have

$$Q' = {}^{S_1} + {}^{S_2}E_R = 40 + 60 - \frac{40 \times 60}{100}$$"

making use of the Perkins' equation, the derivation of which depends upon a denial of the assumption just preceding.[2] This criticism applies without modification to the other quantitative examples given in the chapter. It probably explains in part at least the fact that if one applies the Perkins' equation to the data presented in Chapter XIII on 'Compound Conditioned Stimuli' (2, pp. 209–212) in such a way as to solve *backwards* for $M$ and then applies the resultant value to the other cases given, the agreement with these other results is not encouraging in the least.

In summary, my contentions are: (1) The general fact of stimulus patterning (whether spontaneous or produced by differential reinforcement) can be parsimoniously included under the general case of the generalization gradient and requires no special treatment to account for its mere occurrence; (2) the attempt to give it a special treatment by making use of the afferent neural interaction hypothesis is in effect simply restating the behavioral finding; (3) the real problem presented by the fact of patterning is the quantification of the laws of interaction and generalization to make concrete prediction possible, which Professor Hull has been unable to do because of the very limited applicability of the Perkins' equation. This is not to be in the least construed to imply a deprecation of the effort nor an expectancy on the writer's part that such laws may not be found. As Leeper has pointed out in his review of Professor Hull's book, some of them have already been found by the Gestalt psychologists, but not as explicitly and quantita-

[2] If one abandons the effort to derive Perkins' equation from Corollary I and merely assumes such an additive law to hold, he is still confined by the appearance of $M$ in the equation itself, in addition to the fact that in the absence of any direct empirical evidence regarding it, there seems no good reason left for assuming such a relation.

tively formulated as could be desired. Whether a function involving the summation (including 'physiological summation') of stimulus components is the kind of law which will turn out to be most adequate is not clear. There does not seem to be any strong evidence in Professor Hull's book that it will. His experimental material on this point is confined to a set of data on the conditioned galvanic skin response to which the Perkins' equation is not applied (and if applied does not work), plus the setting up of a patterned reaction to two buzzers of different pitch which is not quantified at all by the Perkins' equation but only by the patterning index. It is not inconceivable that because of the specificity of generalization gradients as regards different kinds of stimulus material, the most that will be achieved in the way of a *general* formulation will not be much more specific than what is now available in the writings of the Gestalt psychologists. It would be disappointing to many if this should turn out to be the case, but it is of the greatest importance that those interested in analysis should not mislead themselves, despite the best of intentions, into supposing that they have advanced beyond such a level when they have not in fact done so.

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# SOME BASIC IMPLICATIONS OF A CONCEPT OF ORGANISM FOR PSYCHOLOGY

BY WILLIAM W. MARTIN

1. *Introduction and perspective.*— There is abundant warrant for the conclusion that progress in the development of psychology, especially here in America, is hindered by too great an extent of elementalism, even atomism, in investigative and interpretive procedure. American psychologists have been so fearful of steering upon the rocks of speculative theoreticism that they have grounded on the sands of more or less barren empiricism. While the exigencies of war are requiring the immediate attention of many psychologists, now would seem to be an appropriate time to consider constructive suggestions looking toward more fruitful results in attacking the problems of psychology. The analysis here submitted is directed more specifically toward an over-all view in the conviction that underlying concepts in psychology are not utilized as effectively as they might be in providing a background for experimental investigations. In avoiding the besetting sin of interpreting experimental results in a larger setting than the conditions of the experiment warrant, we have been guilty of what may be equally as baneful a practice, that of projecting experimental investigations against a too much restricted background of principles. It would seem effective and timely, then, to examine more critically some of the fundamental assumptions of a theory of organism in an attempt to vitalize it as a dynamic frame of reference for psychology.

Although there is ample factual justification for the substantial recognition of the basic significance of the concept of organism, many present-day biologists do not appear to be making as full use of this concept as its significance warrants. Among psychologists the use of this concept in an interpretation of psychology is probably even less fundamental than among biologists generally, in their respective fields. In psychology the concept of organism is usually more of the nature of 'window dressing' than of vital import. It is mostly a term of brevity and descriptive convenience rather than one which expresses underlying coherence in psychological thinking and interpretation.

2. *The concept of organism is soundly based and differs from that of Gestalt.*— In its origin the concept of organism meets the requirement that every valid concept of science must fulfill, in that it is an interpretation derived by the rigorously exacting procedure characteristic of science. The data which constitute the foundation for the concept of organism are obtained from a range of units or patterns of objective reality as widely divergent as planetary systems, chemical compounds, microörganisms, and human organisms. In general terms, that is to say, in terms of the philosophy of science, the organism may be regarded as a system of energies in which genesis, dynamism, process, function, motivation, behavior, rather than substance, attribute, matter, elements, form, structure, are the most significant aspects. The concept of organism implies that psychology is a characteristically biological science, for the reason that, as many biologists have observed, organization characterizes all vital phenomena both at the outset and at all levels of such phenomena; in this respect the fact of organization as an im-

plication of organism confronts all biological science. Carlson emphasizes the basic import of the concept of organism in all areas of biological investigation in saying: "This feature of life (organization) is perhaps its most outstanding character, and its importance is stressed by the very name of the unit in biology —the *organism*" (7, p. 2).

Notwithstanding the assertions of some psychologists, the term *organism* need denote no vague symbolism. On the contrary, it signifies a patterned unity or whole, so related to its parts or elements, that organism and parts are mutually constitutive or determinative of one another. The unifying or integrative influence of the organism upon all segments of its behavior is indicated by Goldstein (25) in asserting that the end to which each (behavioral) process normally tends, is determined by its significance for the essential tasks of the whole organism. The indefiniteness which some psychologists allege is inherent in the concept of organism probably is in part due to the fact that the concept of organism seems to be confused at times with that of Gestalt, although in the field of psychology the two concepts are clearly distinguishable.

The concept of organism refers to all realms of science; the concept of Gestalt, or configurationism, refers most significantly, though by no means exclusively, to the implications of psychology. The concept of organism makes meaningful the nature of intelligent behavior without postulating the abstraction *mind* as an entity separate and different from the organism, and therefore without invoking the mind-body dualism, or any other relationship, with all its attendant difficulties. The concept of Gestalt offers no way out of the mind-body dichotomy and therefore helps to perpetuate one of the most troublesome, confusing, and persistent blind-alleys in the history of thought. Kantor goes even farther, in implying that the concept of Gestalt contributes positively to the mind-body dualism by asserting: "A serious defect in gestalt theory is the abundant employment of the phenomenal. The term phenomenon is clearly used in continuation of the psychistic notions of experience and consciousness" (30, p. 36). The contrast between the two concepts is made increasingly apparent by the fact that the concept of organism has its roots in objectivism, and the concept of Gestalt has its roots in subjectivism. The concept of organism makes clear that biological science, including psychology, signifies an interrelation, that is to say, a correlative integration and differentiation, of constituent elements or parts in the unity of the underlying individual. What, then, in more specific terms, are some of the basic implications of the concept of organism for psychology?

3. *Mankind belongs to the order of nature.*—A human being is a constituent part of nature, a living organism similar in its fundamental principles of development and vital characteristics to all other living organisms, both plant and animal. At first thought this statement may seem to be the expression of so hackneyed a truism that it needs no mention. Its form is trite, but its deeper meaning only little more than superficially influences many current interpretations of psychology. On the one hand, the unsightly scars on psychological interpretations inflicted by unwarranted metaphysical assumptions, such as sterile philosophical dualism, faculty-psychology, psycho-physical parallelism, to mention only a few instances, bear effective, if not salutary, witness that the principle of the human organism as a part of nature needs a new birth in its observance; and on the other hand, the vagaries that psychology must live down on account of an

exuberance of empiricism in general, and of quantitative and statistical presuppositions in particular, indicate that the principle of the unity of organism has not as yet come to full fruition in psychology.

4. *The personality is the human organism.*—As the concept of organism develops toward its more precise implications for psychology, it becomes the concept of personality. The chief semantic difference in the two concepts is that *organism* is more inclusive in its scope, and *personality* implies a major emphasis upon more characteristically human attributes, as distinguished from essentially animal qualities. In other words, according to the usage here employed, the personality *is* the human organism; and it connotes a richness and expansiveness of human life and behavior which the term organism may not as readily convey. Ritter is in substantial accord with the distinction here made in his observation: "For us, whatever personality may be, we must conceive it to be founded upon, and conformable to, the organism. 'Organism' must be the more inclusive term. 'Person' must stand to 'Organism' in the logical relation of species to genus" (44, vol. 2, p. 328).

The gain derived from restricting the meaning of the term personality to the equivalent meaning, human organism, is semantic, for the reason that such restriction is discriminative not only in contributing to greater clarity and definiteness in the use of both concepts, personality and organism, but also in recognizing a hierarchy of integrative levels of organization in both ontogenetic and phylogenetic development. However, Novikoff (41) sees a serious defect in the concept of organism, as he interprets it, on account of its alleged failure to include what he means by integrative levels of organization. To use the term that Novikoff prefers, then, the concept of personality, in its more precise significance of referring mostly to human organisms, implies a somewhat higher integrative level of organization than is implied by the concept of organism, if the latter refers more especially to organisms below the integrative level of organization attained by human organisms. But it is freely granted that the distinction here made between the significance of the concept of organism and that of personality will be considered by some psychologists to be more a matter of individually preferred usage than of generally recognized logical necessity.

5. *The personality is a bio-social individual.*—The concept of organism seems to provide a more effective basis than any other point of view yet formulated for interpreting the human organism as a psychologico-cultural or bio-social personality that emerges in the course of the various stages of its life-history, through a process involving the mutually reciprocal aspects of participating in the creation of and undergoing modification by changing patterns of culture. Strictly speaking, organisms do not develop; they are organisms the instant when they begin to exist as zygotes or fertilized ova. Although the human individual begins as an organism, its organization becomes increasingly complex throughout its life-history through its mutual interaction with its environment. Child's observation that "The organism is inexplicable without [its] environment" (11, p. 30) is pertinent in this connection. This statement is only another way of saying that organism implies environment, or that without environment there can be no organism.

The human environment of the personality is the most important complement of human nature. Culture is another name for the most significant resultant of the interaction of the indi-

viduals that collectively we call society. It has been said that the individual personality is only the subjective aspect of culture, but this characterization seems to reverse the direction implied in the relationship. Although it is true that the personality cannot exist except as an individual having active membership in a human society, there can be no human culture except as there are personalities. The outcome of "Gua's" membership in the Kellogg family for a considerable period indicates that no amount of intercontact between a chimpanzee and human society could transform a chimpanzee into a human personality. There can be no human societies unless there are prior individuals with all the potentialities of human nature inherent in them.

Society as a part of the total environment of the personality provides the opportunities which constitute myriads of sources of stimulation that energize the personality, but the potentialities for capitalizing these countless sources of stimulation must reside in the personalities of which society is composed, for the reason that society has no concrete existence. It is an abstraction. While it is true that the term society is an abstraction which symbolizes a nexus of interactions and interrelations among individuals that is a fundamental phenomenon in the evolution of the race and also in ontogenetic development, it is equally true that social groups are always composed of individual personalities. These personalities are also a fundamental phenomenon. Thus the relationship between the personalities and the group is a reciprocal one. Individual personalities and society are mutually determinative.

6. *The human organism manifests a hierarchical continuity in its functional development throughout its life-history.* —The concept of organism reveals, as no other interpretation so far has done, the hierarchical continuity which characterizes human development from the beginning of the human personality as a zygote, or fertilized ovum, throughout all stages of life, and also the psychological significance of the pre-natal period of human life. Every level of organization which the human organism attains is itself a stage of complete organism; and each level is a prerequisite for the next level in the organism's continuum of life. Gesell assumes that his task in his most recent work is "to demonstrate this continuity—this 'subtile nexus,' which extends from embryo to fetus, to infant and child" (23, p. viii). The facts warrant an extension of a description of 'this subtile nexus' from childhood to adolescence, to adult life and senescence.

This continuity in the internal organization and in the sequential development of the behavioral patterns of the human organism throughout its life-cycle provides one basis for the continuity that pervades the relationship of the organism and its environment. The other basis for this continuity of relationship resides in the environment by its own right. The fitness of the environment for the organism is reversible and therefore means equally as much the fitness of the organism for its environment, as biologists have frequently pointed out. This mutuality of relationship of organism and environment gives rise to a continuity in the patterns of needs, wants, and goals made evident by the manifests behavior of the personality at all levels of its organization. This continuity of needs, wants, and goals, however, is a continuity of development rather than a static sequence in which these elements are repeated without undergoing change in the direction of increased complexity.

7. *Human behavior, from the outset of individual life, is a unitary pattern of adjustive interaction of the person-*

*ality and its environment.*—The concept of organism supplies a theoretical basis for the hypothesis that human behavior from the outset of individual life in the zygotic stage is a total unitary pattern, which is a regulatory or an adjustive process of interaction between the personality and its environment, becoming increasingly individuated, and also correlatively integrated, as development proceeds. This hypothesis, which is an outcome of Coghill's great work, is probably more strongly supported by experimental evidence than any other assumption of similar reference yet advanced. However, as is to be expected in the case of such a complex problem, there is some difference of interpretation among experimental investigators in this specific field as to whether manifest behavior begins with total organismic movements or with localized reflexes, which in a later period of development become integrated into organized patterns.

Coghill (12) is recognized as a pioneer in experimental studies of Amblystoma which led him to conclude, tentatively at least, that the earliest movements in all species are total. Several other investigators have reached the same conclusion. Carmichael also has done much experimental work in this same field and is recognized as a protagonist of the view that in the case of human behavior the available evidence indicates that the earliest movements of the human fetus are probably local and segmental rather than organismically total; and this view is shared by a number of other investigators. Carmichael is careful to indicate, however, that his interpretation does not mean "that adult or integrated behavior at any age is any mere tying together of discrete patterns of response" (8, p. 16). A summary of the evidence for either point of view is not feasible in this connection.

However, it should be said that the problem of the direction of human behavioral development is far more than academic in its significance. An intelligent answer to it contributes to a clearer understanding of adult behavior, both normal and abnormal, which is one of the goals of psychology. The answer to it also is uniquely pertinent for educational psychology, which should be especially concerned with the discovery and formulation of the principles of development mediated by both formal and informal education. These divergent views about the problem are undoubtedly more apparent than real. A critical comparison of the interpretations of Coghill and of Carmichael reveals that they are not as divergent as first impressions might indicate.

8. *Human behavior from its beginning is regulatory, varyingly energized, and organizes the personality with reference to its goals.*—The concept of organism leads to an interpretation of human behavior as a regulatory or an adjustive or a directional channeling. This channeling is characterized by dynamism or directional trends, by affective significance or semantic value to the behaving personality, and by a minimum or critical level of effectiveness, which is the criterion of intelligent behavior. The theory of organism posits manifest or molar human behavior, from its outset in the embryonic stage, as channeled into directional trends rather than as inchoate and nondescript; as possessing feeling-tone, affective significance, or semantic value for the behaving personality; and as attaining a minimum or critical level of effectiveness. Empirical studies have verified these postulates with the result that the traditional categories of motive, emotion, and intelligence have disappeared as *separate and unrelated conceptual entities.*

According to organismic interpreta-

tion, the term *motive* has now become a generic name for the dynamism of behavior, that is to say, for the fact that all the specific interactions of the personality with its environment are canalized in the direction of maintaining the unity or the integrity or the wholeness of the personality; the term *emotion* means that the personality is energized in regulating its behavior in proportion to the extent that such behavior is significant in relation to its goals; and the term *intelligence* has been superseded by that of *intelligent behavior*, which means the total personality organizing and mobilizing its total resources in facing and solving specific problematic situations.

Intelligent behavior is therefore much more inclusive in its significance than the behavior measured by intelligence tests currently in use; it is more inclusive also than the comprehending of relationships in their semantic unities; it implies attributes of personality described in the more or less vague, subjective terms of persistence, courage and determination in overcoming difficulties, pride of achievement, level of aspiration, and other designations of like import. The measure or criterion of intelligent behavior is its effectiveness or competence; that is to say, the extent to which it enables the personality to achieve its goals, to get results by which the personality 'comes to terms' with its environment. If such a measure attains a degree of objectivity these goals or results must have social validity. It should be evident, according to organismic interpretation, that intelligent behavior is ipso facto also energized to some extent and channeled in the direction of goals; that is to say, organismic interpretation views the terms *motive, emotion,* and *intelligence* as signifying closely interrelated aspects of behavioral patterns which are never separable in concrete, living situations but only in abstraction.

9. *The human action-system has its morphological basis in the unity of all the organismic structures.*—The concept of organism indicates the significance in human behavior of the human action-system. The various organs and systems of organs that in their unitary interrelations constitute the structural system are the structural means by which behavior is effected; and the structural system is therefore the structural basis of the human action-system, which is a generic term for all the unitary characteristic actions of the personality, and which in any given behavioral situation supplies the limits of its behavioral possibilities for that situation. It should be evident that all species of organisms and all individuals within any species have certain elements common to their respective action-systems, for the reason that each species is morphologically similar in some respects to every other species and all individuals within the same species have common morphological elements. It is also true that each species is structurally different from every other species, and each individual within a species is structurally different from every other individual of the same species; it therefore follows that the action-system of each species is different from that of every other species, and the action-system of each individual is different from that of every other individual of the same species.

In viewing the significance of the structural and the action systems for an understanding of the personality as a unity of constituent elements, the structural and the functional significance of these two elements respectively become unified and each thereby becomes meaningful as the complement of the other. Furthermore, the meaning of action-system, as *system,* reveals the influence

in the behavior of the personality of *all* the morphological elements that constitute the total structural system. Too often the influence in behavioral patterns of the skeletal frame-work with its attached musculature, of the highly prehensile and manipulatory hand, of the circulating blood, of the upright position of the 'body,' and of other even less frequently considered 'physical' structures, is practically ignored in appraising the behavioral potentialities and achievements of the personality. In such appraisals the functional significance of the sensori-neuro-effector segment of the total structural system is frequently magnified proportionally as the behavioral significance of these often overlooked structures is ignored.

Although a psychologist may not even mention such a term as 'consciousness' without losing, in the estimate of some of his fellow psychologists, his professional respectability, a zoölogist, Kepner, has the intellectual temerity to quote approvingly a colleague as saying: "One's consciousness is realized through the cooperation of all the cells of one's body" (31, p. 7). And by some inscrutable design of Providence, Kepner still preserves his professional status! It appears that the human action-system, by means of its *entire* structural basis, provides both the limitations and the potentialities of human achievement.

10. *All the activities of the personality are comprised in a unity of organismic functioning in which there is no dichotomy.*—The concept of organism supplies a basis for positing that the most complex behavioral process, which includes the aspects known as perceiving, imagining, and thinking, is a biologically adjustive, unitary function; and that this function accounts for human achievement without postulating the abstraction *mind* as an entity different and separate from the organism, and therefore without invoking the mind-body dualism with its attendant difficulties. In psychology there is considerable agreement that the assumption of the dualism of 'mind' and 'body' is a sterile hypothesis of metaphysics that has yielded and can yield no contribution to an understanding of the origin and meaning of complex human behavior and of the consequent significance of human nature as a constituent element in the world of nature. But like Mark Twain's alleged comment on the outcome of the perennial conversation about the weather, not very much has been done about it. However, a theory of organism has made a beginning toward an interpretation of all of the activities of the personality, including its most complex behavior commonly known as thinking, as unified biological functioning. It reveals that the hypothesis of 'mind' as a unique entity, self-caused, distinct from the 'body,' is an empty abstraction that has no reality except that of a pure construct of thought, that is to say, one that has no homologue in the empirical realm of 'brute' fact.

On the positive side, a theory of organism sets up, at least tentatively, certain fundamental assumptions, among which are: (1) a human individual is a true unity, a human organism, that is, a personality whose functions are not separable into a dichotomy of physical and so-called mental processes; (2) the personality is a biological individual and, in the words of Child (11), "has evolved primarily, not as a morphological structure, but as a behavioral mechanism in the broadest sense" (11, p. 236); (3) the most inclusive function of the personality as a behavioral mechanism is what is traditionally designated thinking-behavior; (4) thinking-behavior is as natural a biological process as is digestion, or the elimination of waste material, or the

repairing of wounded tissue, or sleep; (5) all the activities of the personality, including those traditionally classified as 'mentation' or thought-processes, are developments of the primary metabolism of the organism; or (6), in the words of Woodger, "in the human organism at least, the spheres of physical, biological, and psychological science seem in some way to coalesce" (65, p. 12). A theory of organism, therefore, calls on such areas as bio-physics, biochemistry, histology, anatomy, embryology, genetics, neurology, physiology, anthropology, as well as other specialized fields, to supply the basic empirical facts upon which to build a sound foundation. The fact that only a beginning has been made in this undertaking should be interpreted as evidence of the complexity rather than the fatuity of a theory of organism that essays to account for *all* the complexities of human behavior as elements of a unitary biological functioning of the personality.

11. *A theory of organism calls for a constructive treatment of disorders of the personality.*—The concept of organism reveals the significance of disordered behavior as the activity of a poorly integrated or even highly disorganized personality. The concepts of *integrated personality* and of *wholesomely adjustive behavior* have no meaning except in terms of a theory of organism. The personality can be maladjusted and its behavior be thereby abnormal only in the sense that it has become disorganized, disrupted, or disintegrated as a total unitary organism. Prescott (42) writes: "It is entirely natural and yet regrettable that the literature of mental hygiene is devoted so thoroughly to a discussion of problem children in terms of the conditions that are unwholesome for the development of the personality" (42, p. 110). This emphasis on the negative and disorganizing influences affecting the personality is probably due in the main to the alarming extent to which our existing social order tends to engender conflicts and frustrations, which many mature as well as immature personalities cannot successfully confront.

One of the chief dangers in this negative approach to the problem of achieving and maintaining wholesomeness of the personality is that it may point the way only to palliative measures as an attempted solution, rather than insist on a constructive reorganization of society which will insure a wholesome social order that will be an integrative influence in the lives of the individuals composing the social group. Many poorly integrated personalities today require far more urgently the opportunity to be members of a social order that insures them conditions enabling them to satisfy their basic affective needs than they require ameliorative treatment which at best can be only palliative. One of the strictures that can be made against the psychiatry of our time is that in many cases it is only a little more than mitigating in dealing with the all too prevalent disorders of the personality, in that it does not and cannot reach the true source of the disorders which it treats. Psychiatry in these instances is as much a matter of sociology, economics, political science, and ethics as it is of neurology, physiology, psychology, and educational science.

12. *Summary and conclusions.*—If the foregoing analysis of some basic tenets of a theory of organism is faithful to truth and accuracy, it serves to outline the value to psychology of an interpretive procedure which attempts to set up a working basis of assumptions that unify and give direction to effective empirical investigation. More specifically:

1. A theory of organism views the

personality in its factual relationships as a constituent part of the order of nature and therefore regards psychology as a biological science.

2. The concept of organism interprets the personality as a biologico-cultural entity.

3. Instead of viewing the personality as a dichotomy of 'physical' and 'mental' processes, a concept of organism regards the personality as a unity of energy-systems structured in a morphological pattern.

4. From the perspective of organism, organization is the process by which energy becomes structured and mobilized as behavior. Human behavior is thus patterned in the human action-system and is subtended by both the restrictions and the potentialities of this system.

5. A theory of organism recognizes the hierarchical continuity of the various integrative levels of organization attained by the personality in the course of its life-cycle.

6. An organismic theory enables psychology to study human behavior as the unitary, patterned interaction of the personality and its environment, rather than as fractionated responses to isolated stimuli.

7. A concept of organism has no traffic with such elementalistic and 'facultative' notions as 'feelings,' 'impulses,' 'instincts,' 'emotions,' 'interests,' 'attitudes,' 'drives,' 'motives,' 'habits,' as *discrete conceptual entities*.

8. A theory of organism substitutes a sound empiricism, which is the investigative aspect of psychology that is prompted and blue-printed by its theoretical and critical requirements, for a more or less spurious empiricism, which invokes an elementalism and an atomism of interpretation that now invests psychology with a certain degree of sterility.

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